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The Iron Age

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OCT. 10, 1940
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Labor and the Third Term

ONE of the earmarks of the dictatorial state of mind is the nonchalant discarding of men or minorities after these have served their purposes. Under this philosophy no one is indispensable except the "man at the top."

Under a dictatorship also, the method of dispensing with the dispensables after they have been used has been thorough and uncomfortable. Many of Hitler's erstwhile comrades of the Beer Hall Putsch, who helped him to become Fuehrer, were effectively purged with bullets long before the Munich appeasement. In the early days of building his power, Hitler graciously accepted the aid of many Non-Aryans who were influential in German industry and business. After they had served his purpose they became persecuted outcasts.

Union labor was strongly organized in Germany before the dictatorship and there were many skilled as well as unskilled workers in the National Socialist party, which was Hitler's original stepping stone to power. To them, he posed as an emancipator of the "forgotten" man. Today, and even before Munich, German labor has, and had, less freedom of action and less fullness of living than convicts in our American prisons.

If there had been a tradition in Germany that no man should hold the reins of power for more than eight years—and it had been observed—there would be no Hitler today and there would have been no reversion to barbarism such as is threatened by this new World War.

If there had been a tradition in Italy that no man should be supreme for more than eight years, there would be no Mussolini today and the peace-loving peasants would be tilling their fields and tending their vineyards instead of dying of thirst in African deserts.

If there had been a tradition in Russia that no man should rule for more than eight years, there would today be no Stalin; Finland and Poland would still be free and Russia might be ruled by its people instead of by an OGPU.

There are no "warlike people." Wars do not come from the bottom up but from the top down. They are not forced upon a government by its people; they are "sold" to a people by its government. And back of every great war, as the instigator of it, you will find a man who considers himself a god and who holds fast to his reins of office with the death grip of despotism.

"It can't happen here." There is one way to make sure that it won't. There is one way and only one way to assure a continuance of the American Democracy that has lived for 164 years and under which we have enjoyed more freedom, happiness, peace and prosperity than any other nation on earth.

The way to avoid the possibility of a dictatorship in America is to uphold the tradition of eight years of Presidential power and no more. To uphold the principle of rotation in office and refuse to accept the doctrine of "indispensability."

Labor has most to gain by upholding this principle—and most to lose by overthrowing it. For every rich man who loses his money and his business in a dictatorship, there are ten thousand wage earners who lose their freedom.

J. H. H. H. H.



You Inland Men Save My Time

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FOUR MONTHS OF REARMING



• • •

By James A. Rowan
News Editor, The Iron Age

• • •

THE first four months of arming for defense have given industry a clearer picture of the obstacles to building a war machine powerful enough to protect the nation against any combination of hostile nations.

For example—U. S. industry knows that the truth about how long it will take to manufacture enough planes, guns and other equipment to make the country completely safe from outside is going to make bad reading for the American public when the truth is generally understood. The truth is that it will take a long time.

Naturally, industry, which has been a whipping boy for politicians before and will be again, is not looking forward with cheerfulness toward the coming avalanche of blame for the

country's failure to arm quickly. Cal-luses on the heads of business men, erected layer by layer since 1932 by a master builder, are not yet thick enough to dull the impact of blows yet to fall.

Industry knows that a nation cannot fight off a dive bomber with a well-turned sentence or even a fighter plane "on order." If this were so the English, who use the common language better because they have used it centuries longer, would not be sleeping in bomb shelters. A bomb can't be fended off with an adjective, even when the word is "indispensable."

What industry knows—and it knows how to provide the country with military equipment adequate to defend the United States and keep it safe in any

war of countries or of continents—is not yet being put to fullest use. What it can do to put the country into shape for an "all out" war of defense, is not yet being fully utilized. How successful the nation has been in rearming itself so far is hard to measure.

Defense Board Is Called

ON May 29, 1940, the National Advisory Defense Commission was appointed by President Roosevelt to get the country into shape for defense. On June 2, the commission started to work, its duties, as outlined by an act of Congress, being to supervise and direct investigations and make recommendations to the President and the heads of executive departments with respect to:

1—Location of railroads and transportation facilities for military purposes.

2—Mobilization of military and naval resources for defense.

3—Increase of domestic production essential for the support of the armies and the people.

4—Development of seagoing transportation.

5—Assembly of data as to production and availability of military supplies.

6—Giving of information to producers and manufacturers as to requirements of supplies.

7—Creation of relations which will make possible the immediate concentration and utilization of the resources of the nation.

Each member of the commission is designated as an adviser to the President in a major aspect or part of the defense program, and is directly responsible to the President for conducting investigations, making recommendations, and facilitating the progress of the defense program within his assignment.

For reasons best known to Mr. Roosevelt the commission has a body but no real head. William H. McReynolds, an administrative assistant to the President, acts as its secretary

and presides when the commission meets (twice a week).

"We had hardly been on the job a month," says William S. Knudsen (head of the commission's production division), "before we were criticized for not showing results. Particularly on airplanes. Wide publicity was given to our delay in signing contracts for planes and motors, for which there was a perfectly good reason."

The two most important posts on the defense commission are Mr. Knudsen's and that of Edward R. Stettinius, Jr., former chairman of U. S. Steel, now head of the commission's materials division.

How the defense situation looked in late September to Mr. Knudsen, former General Motors president, who, like Mr. Stettinius, quit his job for a nothing-a-year position at Washington, is given in this summary:

AIRPLANES

U. S. manufacturers for years had struggled with small quantities. Allied buying after the war began expanded the U. S. plane industry and when this government came along with orders for 18,000 more planes, it meant expanding plane plants and accessory

plants had to go up in proportion. This could not be done overnight. About 40 per cent of planes made here in the next 18 months will go to the British. Despite this expansion we still are making good planes. Time for a plane or a motor plant to go into operation is 9 to 14 months.

GUNS

Guns, lack of which hampered our military preparedness in the 1914-18 war, are well under way. Present war has emphasized importance of anti-aircraft guns and anti-tank guns. Our arsenals and naval gun factories are operating 24 hr. a day and private plants will add their share when they obtain the machine tools. Time for a machine gun plant to go into operation is 8 to 11 months, for a powder plant 10 to 12 months.

TANKS

Tanks were a big item and we found that the light tanks (weighing around 13 tons) were pretty well set as to design and a small production was under way. The expansion in this case was relatively easy. On the medium (30 ton) tank, we practically had to start with the running gear, because expe-

TRANSPORTING THE ARMY—Rapid expansion of the Army has created problems for the Army's Motor Division, headed by Brig. Gen. J. E. Barzyski (top center in light suit). Around Brig. Gen. Barzyski's desk are grouped his assistants in charge of supplies, field operations, engineering, distribution and procurement. Below is a huddle in the Navy's Design Division on layouts for Naval air stations. Third from the left is Commander C. A. Trexel, U.S.N. design manager.



Photo by Harris-Ewing

rience in Europe had dictated extensive changes in armor and armament. Three responsible manufacturers have been lined up to make medium tanks and one to make heavy (50 tons and up) tanks. Next spring or summer we will have medium tanks and a few heavy ones. Also we have allowed the British to place orders.

The Machine and its Critics

MOST ironic, to American builders of machine tools needed to produce these planes, tanks and guns, also the ships, to protect the nation, has been the about face in the last 12 months in the attitude of one-time critics of labor-saving machinery. The change in attitude of the critics, some of whom live in Washington, may be expressed like this:

1939

"Let's tax and license the machine so that it can't destroy jobs. The

*One way to widen the bottleneck in machine tool production would be to provide funds for some of the smaller machine tool plants to make necessary expansions. In their position as subcontractors, many of the machine tool companies whose successful operation is vital to U. S. defense, apparently have been overlooked in the giving of government financial aid for defense plant expansion. Fortunately, the machine tool industry, like the airplane industry but to a slighter degree, in 1939 and 1940 had heavy export business which prepared it, in part, for the heavy current demands for its products.

trouble with the country is too many, too efficient machines. Why isn't it stopped?"

1940

"Industry is unpatriotic or, at least, asleep. Why doesn't it produce more machines, to make more guns, more airplanes and more tanks. Can't the government do something?"

Most important of all the tangible bottlenecks is in machine tools and gages despite the great efforts of the 150 or so machine tool manufacturers of the United States to meet the shortage.*

Mr. Knudsen has pointed out that a heavy strain is going to be placed on the machine tool builders and the tool shops of the United States. "The big time factor in our program," he said recently, "is to get the tools we need. I feel, however, that as far as machine tools are concerned, if we move wisely and get the proper sequence in filling orders, we will be able to come through. The machine tool builders are giving us 100 per cent cooperation in allotting capacity and deliveries. Every so often some statement comes out implying that manufacturers (of all kinds) are holding back and not cooperating. In the four months I have been in Washington I have talked to a lot of manufacturers, large and

small, and I have still to find one who was not willing to do everything he could to help the program, even to the extent of turning over his design of motor to someone else because he could not handle the large quantity himself. There are slackers in all walks of life but on the general statistics they will not run over three per cent. The American people will never back down on the defense of the country. They will work for it and will produce the stuff."

War Mongers or Peace Mongers

SOME observers would place the percentage of "slackers" in the steel and metal working industry at under 3 per cent. In four months of rearming since the National Advisory Defense Commission was appointed, industrial leaders in the U. S.—the really indispensable men to U. S. defense—found themselves in an unfamiliar role. In the World War, critics (of the steel industry particularly) said:

"They want war so they can sell more battleships and guns and make more money. In industry you will find the war mongers."

In the present war, critics of the steel and allied industries, some of them not obscure individuals, are saying to all who will listen:

PLANS FOR DEFENSE—Mass production of blueprints for the Navy's engineers and draftsmen is made possible by blueprint machines like that shown at the right. These machines reproduce plans at the rate of about 14 a minute. The operator is examining and trimming prints as they leave the rollers.



"Industrial leaders in the U. S. want peace. They would do anything to get peace. Some of our outstanding business leaders are anxious to make any sort of peace with Hitler. In industry you will find the appeasers (or peace mongers)."

One of the many problems confronting American industry—the front line of defense in the 1939-? war—is the dramatizing of the nation's need of restoring health to the domestic economy (making jobs for the 8 million idle) against competition of the greater drama in Europe. Yet the most important step to defense would be the ending of industrial stagnation, the revival of private investment, the making of jobs. Uncertainty on excess profits tax-amortization legislation should have been removed earlier. Efforts to solve this great problem do not draw as large a crowd and perhaps as many votes as action in the violent field of international diplomacy. Recovery has become a dull subject.

Said Alfred P. Sloan, chairman of the board of General Motors, in a recent address: "The paramount issue of today is national defense, the physical as distinguished from the economic approach to the preservation of our American way of living. To insure this it is of vital concern to us that the doctrines of democracy emerge victorious in the present struggle. Any other result would be a catastrophe to our civilization.

"The more vital instruments of warfare today are the most technical products of industry. The essential program must be directed by those possessing the technical knowledge and experience to assume such a responsibility. There is no room for political considerations. A job is to be done. Let us do it intelligently and without hysteria." Mr. Sloan added that national defense has become the keynote of our national policy. National security has become essential to national confidence. The problem becomes two-fold—national defense and reconstruction of economic policy.

The Nation's Greatest Strength

BY early October some industrialists had concluded that four months of rearming had brought out at least two points regarding the position of the United States in a warring world:

Entire Nation Must Become Interested

"The (National Defense) commission's whole problem in the matter of arming for defense sums itself into some very simple policies. First, it is essential that the whole country becomes interested and engaged in the problem of National Defense.

"Second, it seemed prudent, and still seems so, to superimpose the defense load on the regular business of the country where this does not result in loss of speed and third, where existing facilities could be used they would naturally be employed first and where new plants are to be built the location would be carefully selected to insure transportation, power and water, along with the proper labor supply."

—William S. Knudsen

ITS GREATEST WEAKNESS—Lack of faith at Washington in industry and the U. S. system of private enterprise.

ITS GREATEST STRENGTH—Best peacetime industrial equipment and industrial organization (plus, of course, best resources in people and raw materials).

The most discouraging news received by U. S. industry during its last four months of effort to get into action in mass production of planes, tanks and guns is shown in the following IRON AGE news story of late July:

WASHINGTON - - A delayed bedtime story was broadcast early Friday morning, July 19, from the White House. The spirit of Jiminy Cricket was speaking. A mellifluous voice in a fitting climax to the battle of shams at Chicago flowed into an affectedly plaintive cadence as Franklin D. Roosevelt told radio listeners who had bravely resisted slumber that conscience forced him to accept renomination. Only the nomination would have made him yield. He so wanted to retire to private life, but conscience told him it was his duty to make the noble sacrifice.

Of prime importance among obstacles in the way of getting the industrial machine into high gear to produce the necessary military equipment is the coming election which has thrown its shadow over the last four months. Nomination of a Democratic candidate other than Roosevelt would have immeasurably lessened the fears with which industry faces Nov. 4 and after. This is because industry knows that much restrictive legislation must be wiped out to permit an "all out" industrial preparation for war.

An election without Roosevelt in it, coming at this time, would be an obstacle with the not insurmountable elevation of one of the gentler Berkshire hills. To industry an election with Roosevelt as one of the candidates is, at the very least, a Mt. Everest.

Yet industry, fighting against the unbelievably difficult task of making the country militarily secure in a short time still is obliged to do its vital work somewhat with the feelings of a man who is destined to face the firing squad.

Progress of the defense program in the United States since May 29, 1940, can be appraised with fair results from this weekly timetable:

NEWS TIMETABLE

MAY 23—Shipbuilders warn Walsh-Healey, other laws hamstringing defense drive as Roosevelt asks for 50,000 fighting planes, requests billion for Army, Navy.

MAY 30—New Deal will seek to keep firm hold on United States defense program, using business men only in advisory capacity. Roosevelt opposes relaxation of labor laws.

JUNE 6—Defense Advisory Board offices are established.

JUNE 13—Reduction in number of special steels is among first problems of National Defense Commission.

JUNE 20—Administration shows concern over possible Fifth Column activities but shows no sign of relaxing laws giving employers more freedom in hiring and discharging of employees. Manufacturers still fear NLRB penalties.

JUNE 27—Steel, unlike machine tool industry, has no defense program so far. War, Navy appropriations will help mill schedules. Price control unlikely unless U. S. enters war. Allocation, priorities subjects for future.

JULY 4—Orders for military supplies soon to swell to large volume. Surveys of resources, aimed to avoid mistakes of 1914-18, will permit early placing of contracts.

JULY 11—Check-up shows steel companies which contested Walsh-Healey minimum wage order so far are little affected. Navy ready to act if manufacturers show reluctance to bid on vital material.

JULY 18—Agreement on 5-year amortization for plants making defense equipment may remove one of program's biggest obstacles. Legislation will speed ordnance contracts. Excess profits tax to be applied to all industries.

JULY 25—Defense program continues in embryonic stage. Public seen misled about production of war equipment. Congress leaden-footed in considering plant amortization legislation and excess profits law.

AUG. 1—Roosevelt preaches the doctrine of indispensability of one man—himself. Should the New Deal be elected and, if the country can stand the further impact of its economic policies, a further crackdown on business may be expected.

AUG. 8—National Defense Advisory Commission upset over Assistant Attorney General Thurman Arnold's anti-trust activities at a time when industry cooperation is sought for defense program. Arnold asked to defer his suit against 22 oil companies.

AUG. 15—Administration's attitude on amortization may be year's out-

Estimates of Steel Needed for Defense

Finished steel requirements for the U. S. defense program and for the British war machine are estimated by Edward L. Ryerson, Inland Steel Co. chairman, as follows:

For the	Tons
British in 1940	6,000,000
British in 1941	6,000,000
U. S. in 1941	3,750,000
U. S. in 1942	5,000,000
U. S. in peak year*	7,000,000
U. S. capacity	57,000,000
For U. S. & Brit. in '42-'49 per cent of capacity	
*1943 to 1944.	

standing defense blunder. Its insistence on tie with excess profits tax legislation hampers industrial expansion to meet nation's needs.

AUG. 22—Federal price-fixing steel seen as potentiality rather than probability. Delay in defense program laid to government rather than to industry.

AUG. 29—Drive to convince public industry isn't cooperating in national defense program opens at Washington. Ickes makes keynote speech in New Deal effort to place the blame on business.

SEPT. 5—Pressure groups, helped by pork barrel politicians fight to win new defense plants for unsuited

areas. Roosevelt clears business of some charges by his aides, reports matter of "excess profits" still a problem.

SEPT. 12—Events this year disprove claims at Washington that price is prime factor in steel demand. Taxes far higher than planned now are seen as certainty. Defense cost in six years may be 37 billions.

SEPT. 19—Housing program providing \$150,000,000 to end any shortage impeding national defense is approved. Private capital expected to provide two-thirds of defense housing requirements.

SEPT. 26—New Deal economists support \$20 billion lending program to finance defense, oppose economies in non-defense items and paying for defense by heavier taxes now.

OCT. 3—Roosevelt blames Congress, not business, for defense delay, but Wallace, his teammate, working other side of street, declaring industry wants to "appease" Hitler. Later the President again takes up attack.

An examination of the record of the first four months of defense preparation, made as deep as circumstances such as military secrecy permit, suggests that this period has been one of "make ready." The period of actual mass production of most essential war equipment is not yet at hand, although there are many signs that this will begin in 1941. Output will be stepped up after the election regardless of whether Willkie or Roosevelt is elected.

NEW AIR BASES—Design and construction of the large new naval air bases has greatly increased activity in the Navy's aviation facilities section, headed by Commander E. L. Marshall, projects manager (holding telephone). Across from Commander Marshall is Commander F. C. Bedell, assistant projects manager.



Photo by Harris-Ewing

EQUIPPING A CARTRIDGE CASE SHOP

By E. C. BOMAR

*Lieut. Col., Ordnance Department, U.S.A.;
Officer-in-Charge Artillery Ammunition
Department, Frankford Arsenal,
Philadelphia*

THE artillery cartridge case shop is essentially a jobbing shop. At Frankford Arsenal the contrast in this respect between the equipment of the artillery cartridge case shop and the small arms cartridge case shop is very marked. In the small arms cartridge case shop each machine is designed to perform a certain operation on one particular cartridge case only. There is high production capacity, but no flexibility. The artillery cartridge case shop, on the other hand, is equipped to handle a great variety of sizes and shapes in cartridge cases on three lines of presses and a very limited number of finishing machines. The same requirement will confront any commercial manufacturer who contemplates equipping his shop for artillery cartridge case work.

The three press lines are referred to as the light press line, the medium press line, and the heavy press line. They can, between them, handle artillery cartridge cases of any size in present use in the United States Army. The light press line is designed to cup and draw cartridge cases for all guns from a minimum size of slightly under 1 in. to a maximum size of slightly over 2 in. This size refers to the caliber of the gun which is approximately the same dimension as the diameter of the neck of the cartridge case. Fig. 1 shows a group of typical cartridge cases which we have cupped and

drawn on the light press line at Frankford Arsenal. Fig. 1-a shows details of one of these cases.

The medium press line is designed to handle the cupping and drawing of cartridge cases for guns above 2 in.,

up to and including the smaller 3-in. cartridge cases. Fig. 2 shows some of the typical cartridge cases which have been made on this press line. Fig. 2-a shows details of one of these cases.

The heavy press line is designed to handle cartridge cases 3 in. and over, including 90 mm. and 105 mm. sizes. Some representative cases that have been manufactured on this press line appear in Fig. 3. Fig. 3-a shows details of

one of these cases.

One of the first questions that usually comes up when press equipment for artillery cartridge case work is discussed is, should press equipment be hydraulic or mechanical? At Frankford Arsenal both types of presses are employed. In general, it may be said that where short strokes only are required, the mechanical or crank type of press has definite advantages. It is less expensive, and, when equipped with dial feed, is generally faster. On the other hand, where longer strokes are required, the advantage is definitely with the hydraulic. Just where the dividing line should be drawn depends somewhat upon individual preference. The light press line at Frankford Arsenal is all mechanical. There is one

HOW are cartridge cases made? What are the equipment and costs involved? What production can be expected? All these questions are answered herein in detail. This article is released for publication by Chief of Ordnance, U. S. Army, and the statements and opinions are those of the author and not of the Ordnance Department.

30-ton hydraulic press, which is used in part for the last drawing operation on the light line, and in part, for the same operation on the medium line. The medium press line consists of hydraulic presses, except for the cupping and first draw operations, which are performed on crank presses equipped with dial feeds. The heavy press line is hydraulic throughout, except for the cupping operation.

In buying hydraulic draw presses, it should be remembered that additional length of stroke adds little to the cost of the press and may add to its field of usefulness. On the other hand, an increase in pressing speed, while maintaining the tonnage rating, is relatively expensive. On crank presses an increase in stroke, maintaining the same mid-stroke tonnage capacity, runs into real money.

Turning to heading equipment, the knuckle joint type of heading press is, in the opinion of the writer, the most suitable type for heading small artillery cartridge cases, such as are drawn on our light press line. When equipped with a multi-station dial, this type of press is both faster and less expensive than the hydraulic type. When press requirements for the medium press line are considered, the buyer enters a doubtful zone where the obvious advantages of the hydraulic type of heading press must be weighed against the factor of added cost. A knuckle joint type of heading press is frequently used in this field, and when equipped with a dial carrying four, six, or eight heading posts, high production can be obtained. On the other hand, a turret type of hydraulic header will also give high production and will (theoretically, at least) produce a slightly more uniform hardness through the head of the case. It should also, so the writer believes, show longer life.

As regards the heavy press line, the heading press equipment is definitely hydraulic. Although the equipment at

Frankford Arsenal consists of headers of the turret type carrying six heading posts on a revolving turret or dial, less complicated machines are in use elsewhere, which have a lesser number of stations and are, accordingly, less expensive. There is, of course, a drop in production capacity with the single station or two-station heading press.

Table I shows the strokes, tonnages, production rates, and approximate cost of press equipment considered suitable for the production of cartridge cases up to and including about 2 in. This corresponds, in general, to the light press line installed at Frankford Arsenal. The bulk of the business handled by such a press line at the present time would consist of one or more types of 37 mm. cartridge cases. However, the press line has capacity to handle

somewhat larger cases, and this reserve capacity is considered desirable from two standpoints. First, more trouble-free operation is to be expected with excess capacity machines on orders of 37 mm. cases, and second, the line is prepared to handle orders for larger cases that may eventually be expected if it becomes necessary to step up the sizes and muzzle velocities of guns in this class of anti-tank and anti-aircraft weapons.

Table II shows the strokes, tonnages, production capacities, and approximate cost of presses suggested as suitable for inclusion in a medium press line. This press line is intended primarily for 75 mm. cartridge cases, but has a reserve capacity to take the smaller designs of the various 3 in. A. A. cases.

Table III shows the strokes, ton-

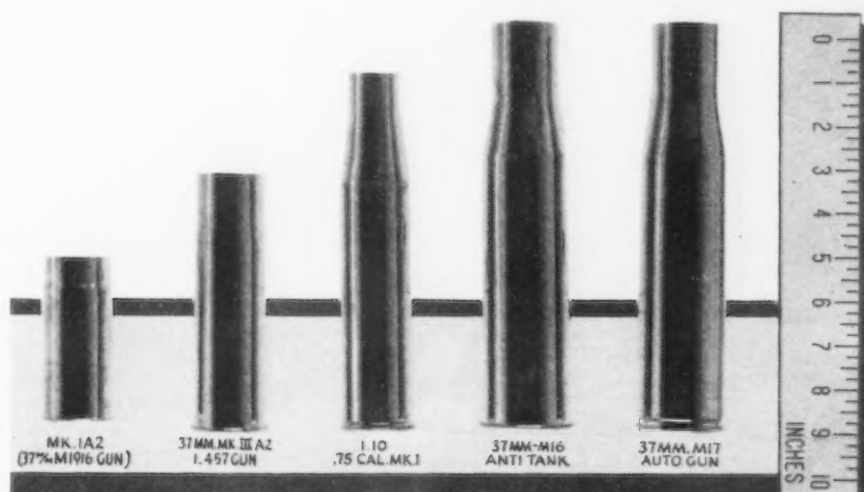
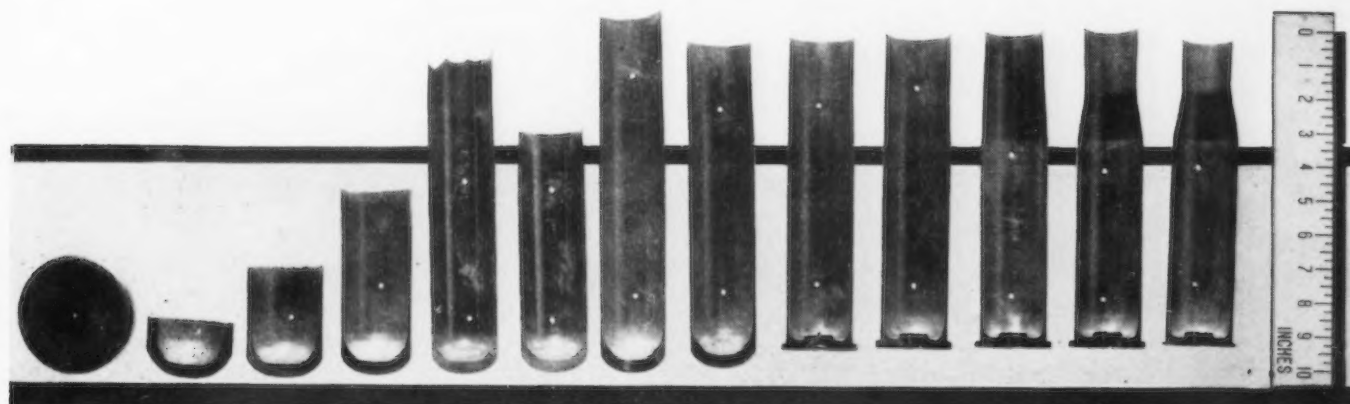
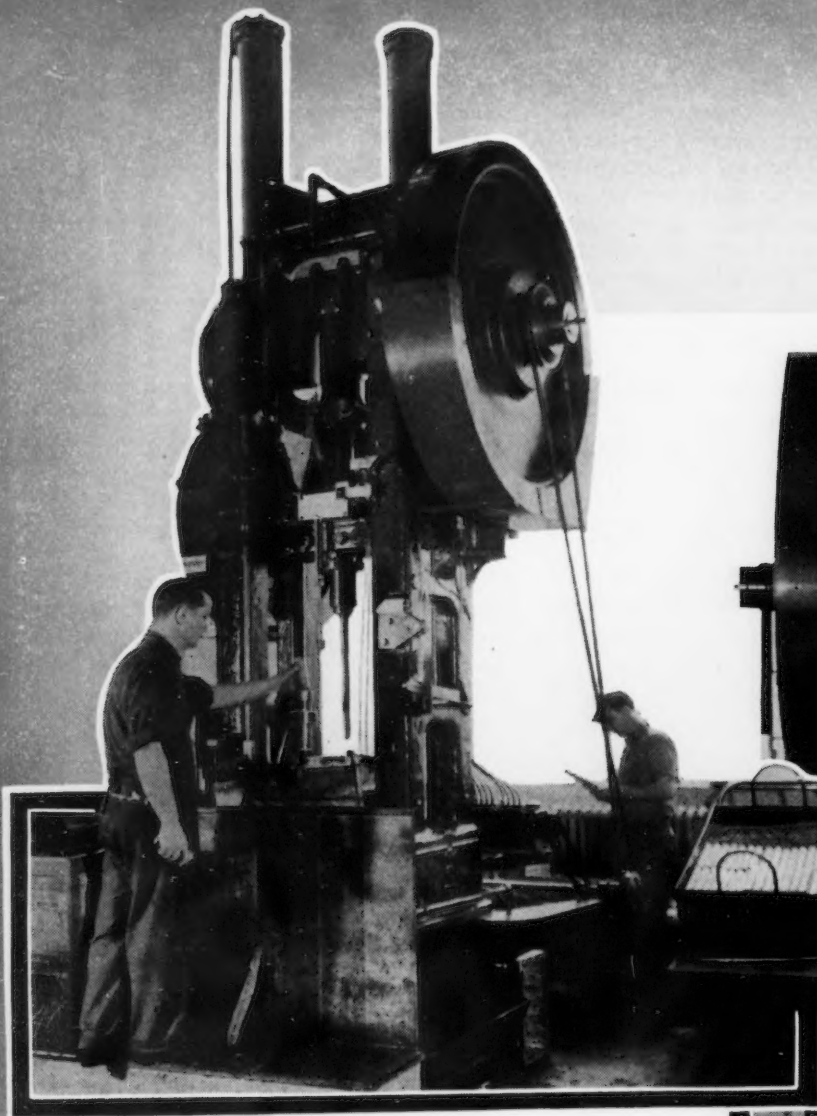


FIG. 1—A group of representative cartridge cases which have been drawn on the light press line at Frankford Arsenal.

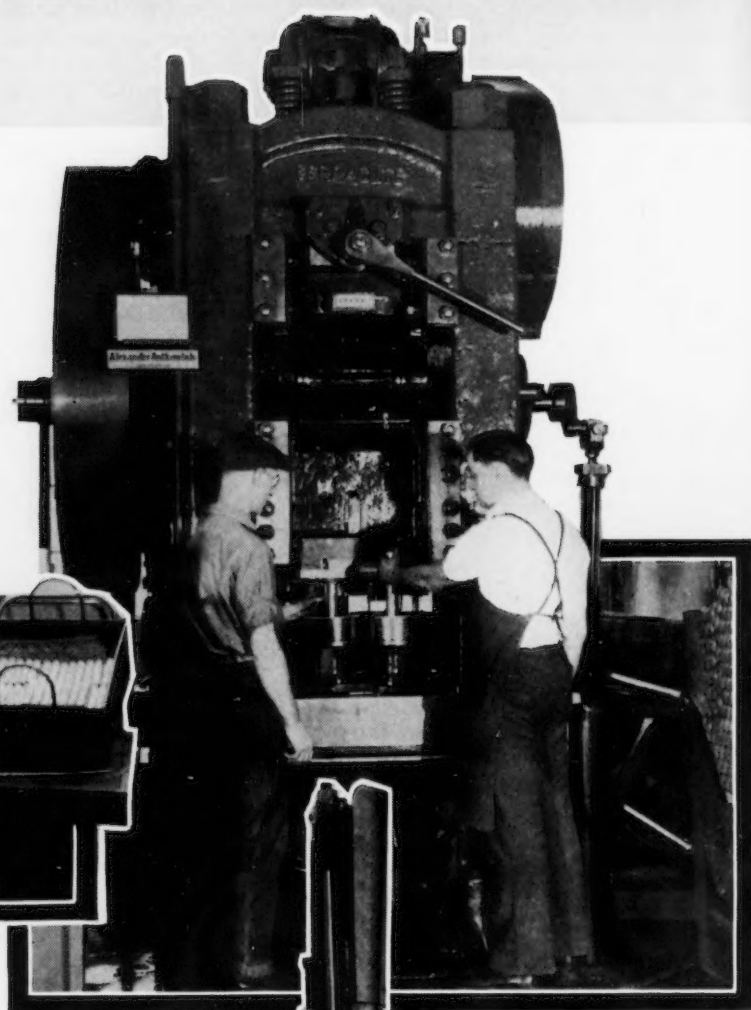
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FIG. 1-a—Sectionalized view of 37 mm. cartridge case showing operations. The light spots are drilled holes, as the samples were prepared for mounting on a display board.





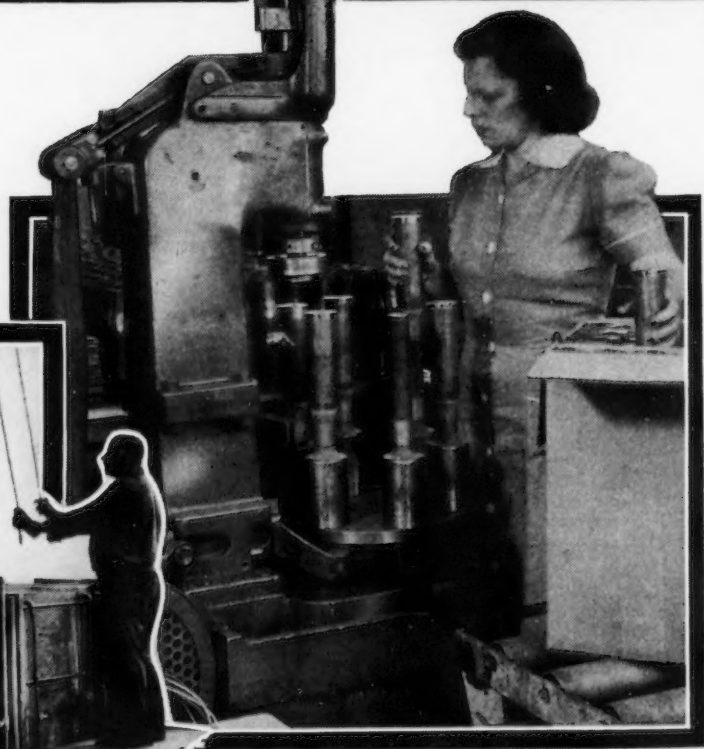
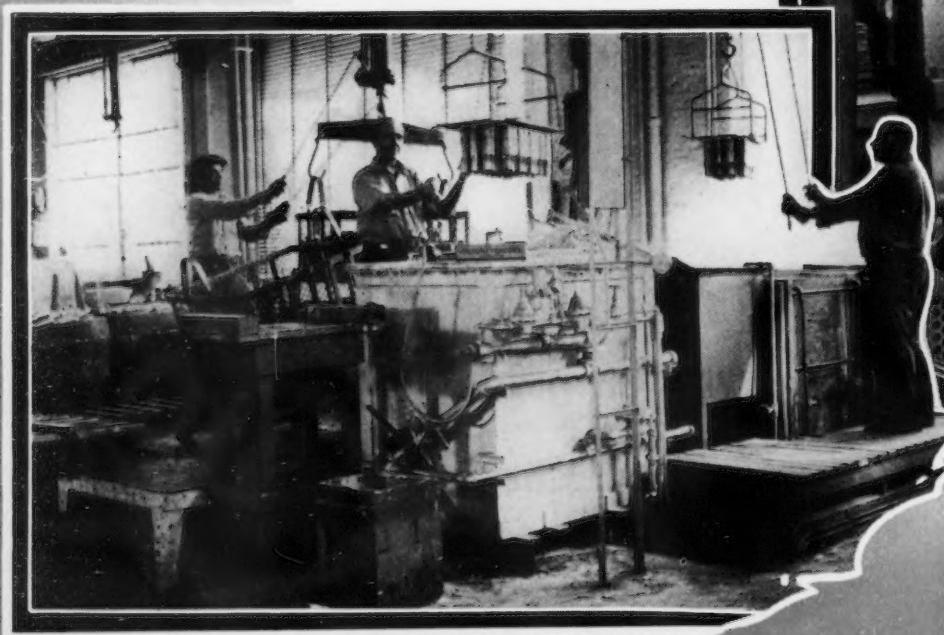
ABOVE
THIRD draw on the light press line.

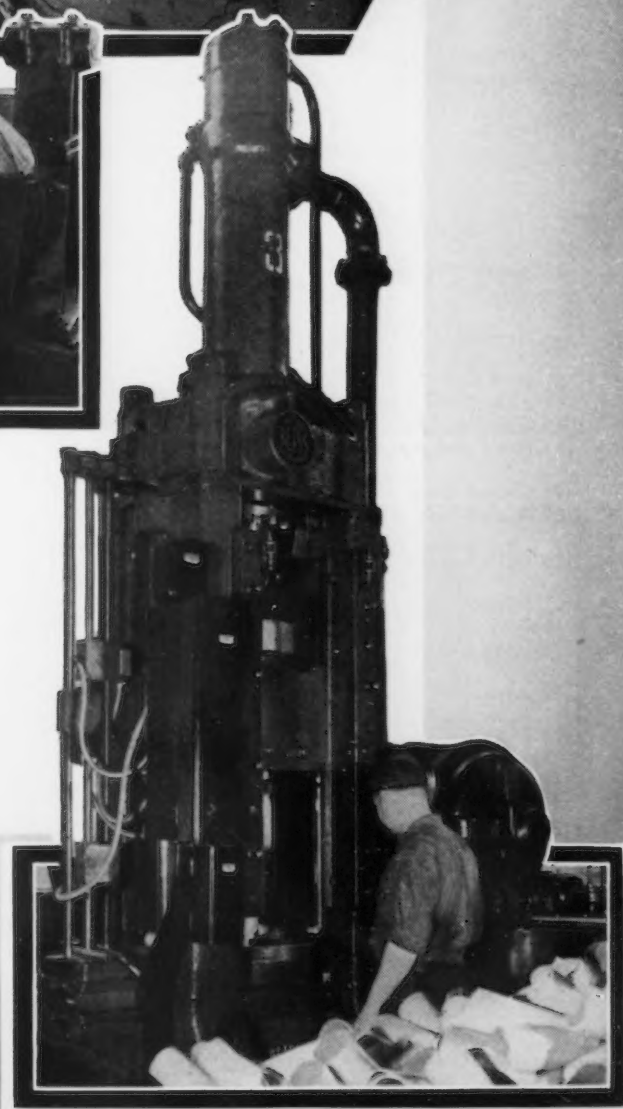
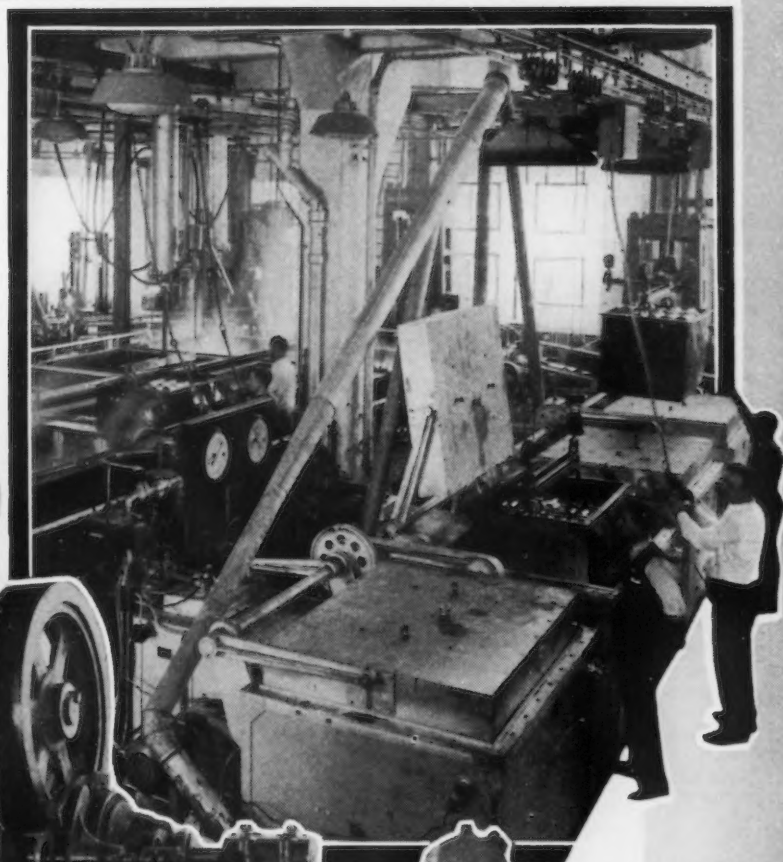
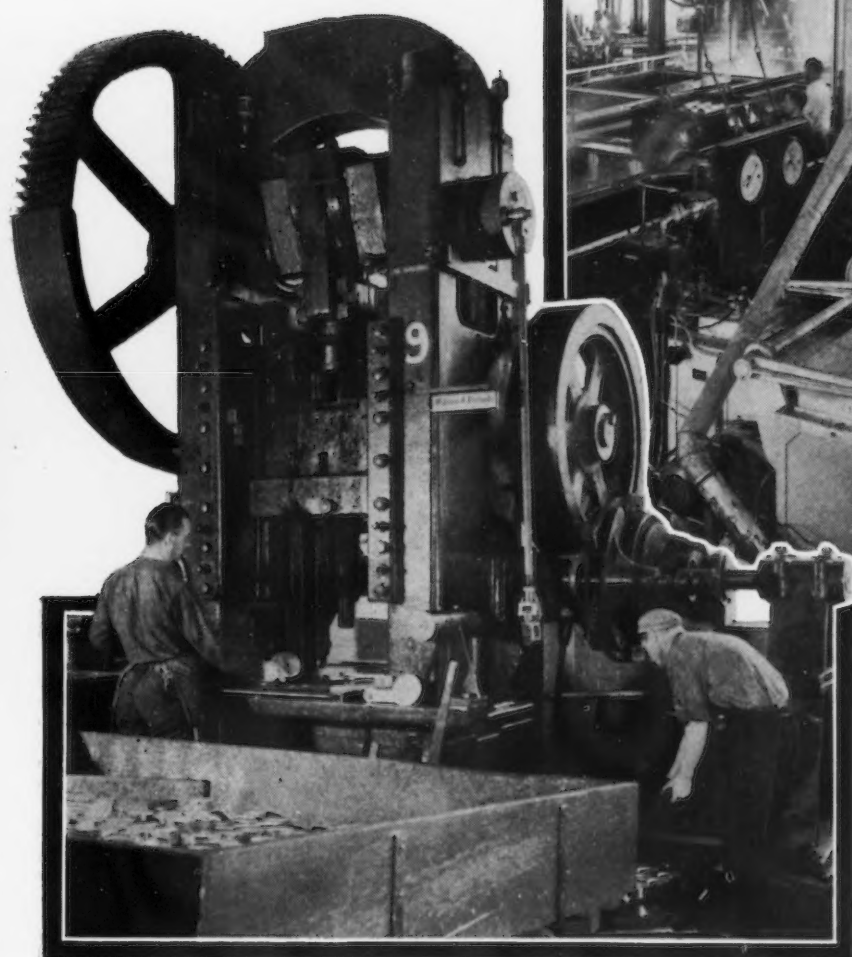


ABOVE—RIGHT
HEADING operation on light press line showing dial feed.

BELOW
FINAL mouth anneal and wash showing salt-petre furnace and wash tank setup.

RIGHT
STAMPING identification marks on the head of cartridge cases from the light press line.





ABOVE
CUPPING operation on medium press line.

UPPER RIGHT
RECIRCULATING batch type furnaces used for anneal between draws. Furnace shown is of Lindberg manufacture.

RIGHT
HYDRAULIC draw press on the medium press line.

TABLE I—LIGHT PRESS LINE

(Capacity to include 2 in. or 50 mm. cases)

Operation	Machine	Length of Stroke	Strokes per Minute	Tonnage Required	Remarks	Cost Estimate Completely Installed
(1) Cup	crank press	10 in.	30	60	dial feed	\$8000
(2) Anneal and cool	continuous type furnace				125 min. at 1100 deg. F.	
(3) Pickle and wash	tanks				5 per cent H ₂ SO ₄ at 170 deg. F.	
(4) First draw	crank press	14 in.	30	60	dial feed	9000
(5) Anneal and cool	same as operation No. 2				75 min. at 1100 deg. F.	
(6) Pickle and wash	same as operation No. 3				5 per cent H ₂ SO ₄ at 170 deg. F.	
(7) Second draw	crank press	18 in.	25	50	dial feed	9000
(8) Same as operation No. 2					75 min. at 1100 deg. F.	
(9) Same as operation No. 3					5 per cent H ₂ SO ₄ at 170 deg. F.	
(10) Third draw and wash	crank press	22 in.	20	35	dial feed	9500
(11) First trim	V. & O. or equal				30 cases per min.	
(12) Same as operation No. 2					75 min. at 1100 deg. F.	
(13) Same as operation No. 3					5 per cent H ₂ SO ₄ at 170 deg. F.	
(14) Fourth draw and wash	hydraulic press	36 in.	45 (1 per min.)	30	dial feed	18000
(15) Second trim	same as operation No. 11				30 cases per min.	
(16) Head and indent	600-ton knuckle joint	2½ in.	20	600	dial feed	15000
(17) Drill primer hole	2-spindle Allen or equal	1½ in.			double indexing	
(18) First anneal for taper	saltpeter furnace				935 deg. F., 2 min.	
(19) First taper	crank press	8 in.	20	15	dial feed	6000
(20) Second taper	crank press	8 in.	32	25	dial feed	6500
(21) Finish machine head	Coulter Automatic or equal				6 cases per min.	
(22) Final mouth anneal	same as operation No. 18				960 deg. F., 2 min.	
(23) Final wash	tanks				batch type	
(24) Relief anneal	furnace				50 min. at 500 deg. F.	
(25) Inspect	benches					
(26) Stamp and pack	spring trip stamp machine, Noble & Westbrook, or equal	2 in.	30		100 lb. spring	2700

TABLE II—MEDIUM PRESS LINE

(Capacity to include 3 in. cartridge case)

Operation	Machine	Length of Stroke	Strokes per Minute	Tonnage* Required	Remarks	Cost Estimate Completely Installed
(1) Cup	crank press	16 in.	20	140	dial feed	\$12000
(2) Anneal and cool	recirculating batch type				1150 deg. F.—2000 lb. per hr. max. with extra baskets	6000
(3) Pickle and wash	tanks				10 per cent H ₂ SO ₄ at 170 deg. F.	Depends on type
(4) First draw	crank press	18 in.	20	125	dial feed	
(5) Anneal and cool	same as operation No. 2				1125 deg. F.—2000 lb. per hr. max.	
(6) Pickle and wash	same as operation No. 3				10 per cent H ₂ SO ₄ at 170 deg. F.	
(7) Second draw	hydraulic press	40 in. max.	45 ft. per min.	90	hydraulic	22000
(8) Anneal and cool	same as operation No. 2				1125 deg. F.—2000 lb. per hr. max.	
(9) Pickle and wash	same as operation No. 3				10 per cent H ₂ SO ₄ at 170 deg. F.	
(10) Third draw and wash	hydraulic press	60 in. max.	40 ft. per min.	60	hydraulic	20000
(11) Trim	V. & O., or equal				30 cases per min.	
(12) Head and indent	1000-ton hydraulic			640	hydraulic—dial feed	30000 (2-station)
(13) Anneal for taper	saltpeter furnace				950 deg. F., 1¾ min.	
(14) Taper	hydraulic press	30 in.	60 ft. per min.	40	dial feed	19000
(15) Finish head	New Britain-Gridley, or equal				5½ cases per min.	21000
(16) Final trim	2-spindle drill press	1.5 in.				2000
(17) Wash	tanks					
(18) Final mouth anneal	saltpeter furnace				1010 deg. F., 2½ min.	
(19) Relief anneal	surface combustion furnace, or equal				conveyor type	
(20) Inspect	benches				50 min. at 500 deg. F.	
(21) Stamp and pack	hydraulic	3 in.	30	15	dial feed	9000

* On crank type presses this figure represents *midstroke* capacity.

nages, production capacities, and approximate cost of presses considered suitable for inclusion in a heavy cartridge case line. This line would ordinarily handle cartridge cases from the 3 in. A.A. size up to and including the largest cartridge cases now being manufactured by the Army or Navy. It could, of course, handle cases smaller than the 3 in., but would do so at some sacrifice of efficiency.

A further word with reference to heading presses might be desirable. The rating of these presses of knuckle joint type is somewhat misleading. It has been the experience at Frankford that a 1000-ton knuckle joint press may be expected to give some trouble in heading 75 mm. cartridge cases, even though the actual pressure required to head this particular case is only 670 working tons. When the Frankford difficulties were called to the attention of the press manufacturer, he pointed out a standing recommendation to the effect that, in general, the knuckle joint type of heading press should be purchased with a rated tonnage approximately double the actual working tons required in the heading operation contemplated. In view of past experience, the writer would be inclined to select a 1200-ton heading press for this particular cartridge case and, in general, it is believed that same rule-of-thumb should be applied in buying knuckle joint type of heading presses, namely, compute the working tons' pressure required, multiply by 2, and select a press with a rate approximating the latter figure. The working tons required will always be in the neighborhood of 70 tons per sq. in. of head surface on the finished case.

Several press manufacturers have recently brought out very helpful booklets covering press requirements

for artillery cartridge case work. Representative of these are the booklet recently published by the Hydraulic Press Mfg. Co., Bulletin No. 4008; and the booklet by the E. W. Bliss Co., "Computations for Press Metal Working Operations."

In addition to press equipment, the artillery cartridge case shop must be equipped to anneal, pickle, and wash between each draw, to give a final stress relief anneal, and to anneal the mouth of the case prior to and after the tapering operation. Special machine tool equipment is also required for finish machining the head, drilling and reaming the primer hole, and trimming to length, both between draws and after machining. As regards annealing equipment for the anneal between draws, it is the opinion of the writer that the recirculating batch type of furnace is particularly suitable for the larger size of artillery cartridge cases. The work can readily be stacked into the basket by hand in

such a way that the same container can carry the work through the furnace, and then without pause into a quenching tank, and thence through the pickle and wash operations without transfer. With the small cases which comprise the normal load of the light press line, this is not practicable, since those pieces are so small that it is not economical to arrange them individually by hand in the container. Hence, they have to be tumbled in the acid pickle, and in the subsequent washing operations, to insure that all

FIG. 2 — A group of representative cartridge cases which have been drawn on the medium press line at Frankford Arsenal.

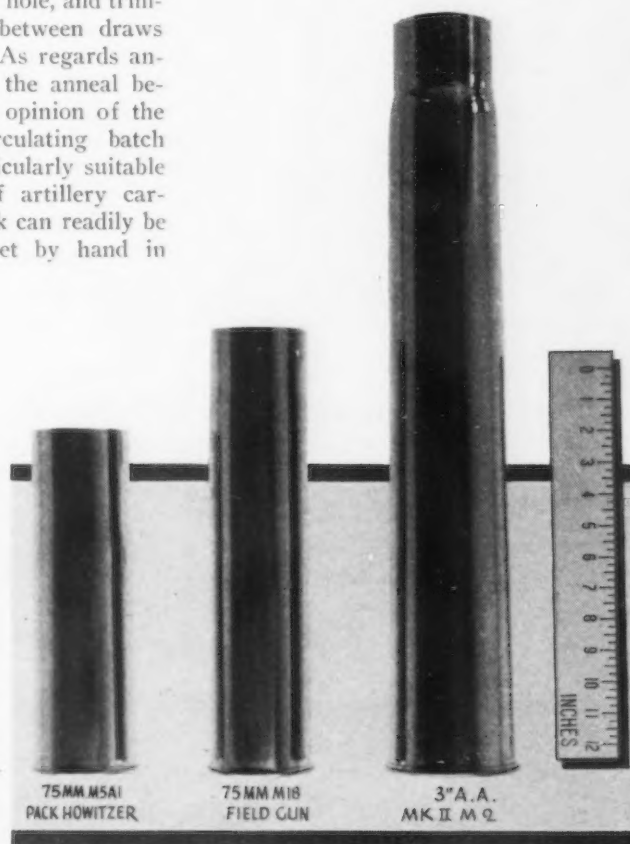
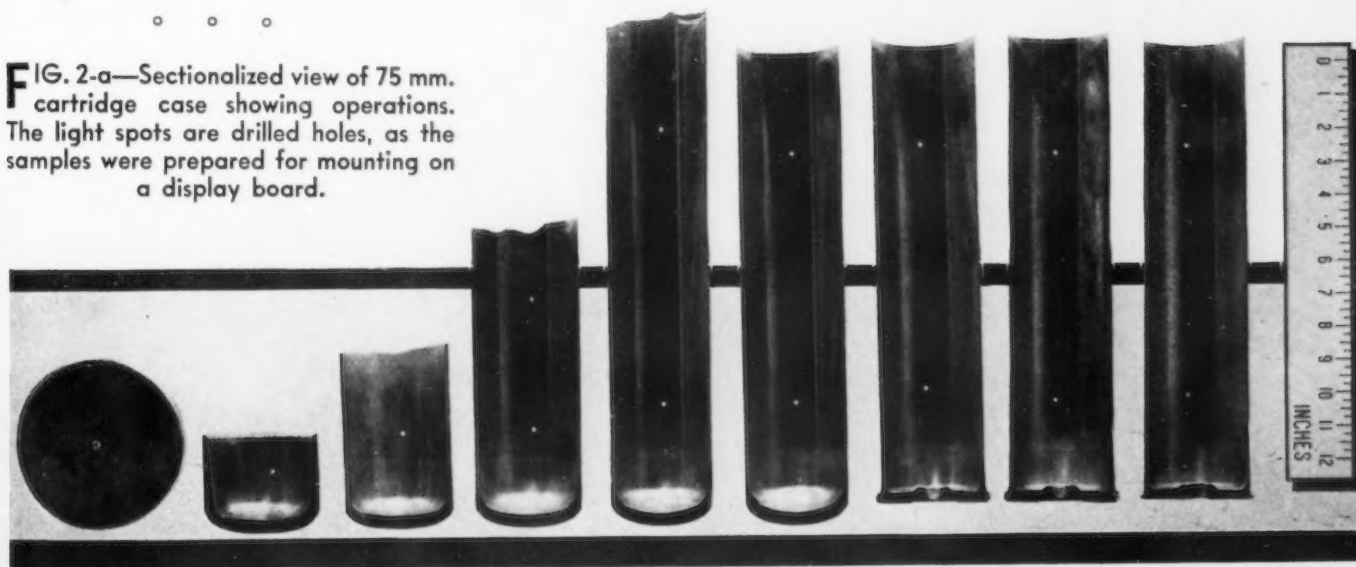
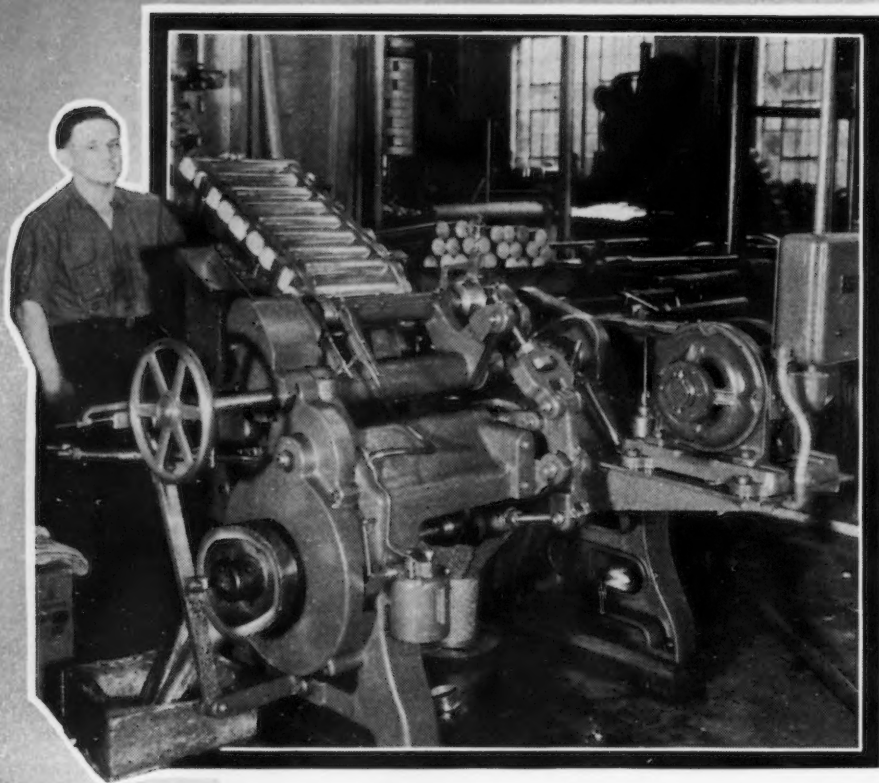


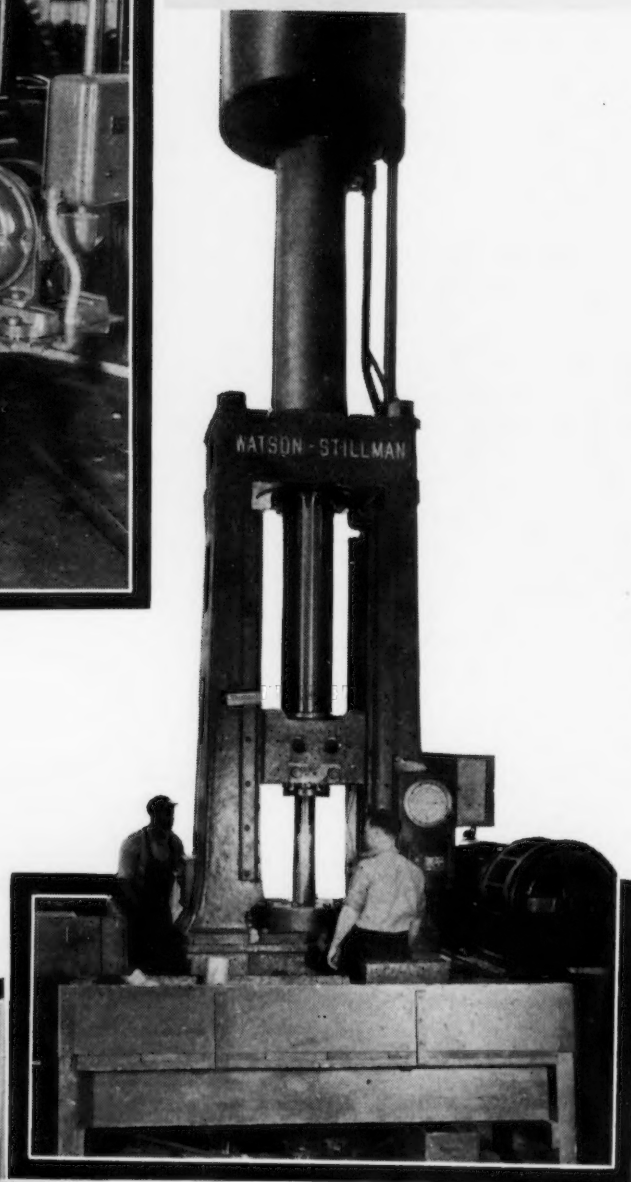
FIG. 2-a—Sectionalized view of 75 mm. cartridge case showing operations. The light spots are drilled holes, as the samples were prepared for mounting on a display board.





ABOVE
FINAL trimming operation, using V. &
 O. Trimmer.

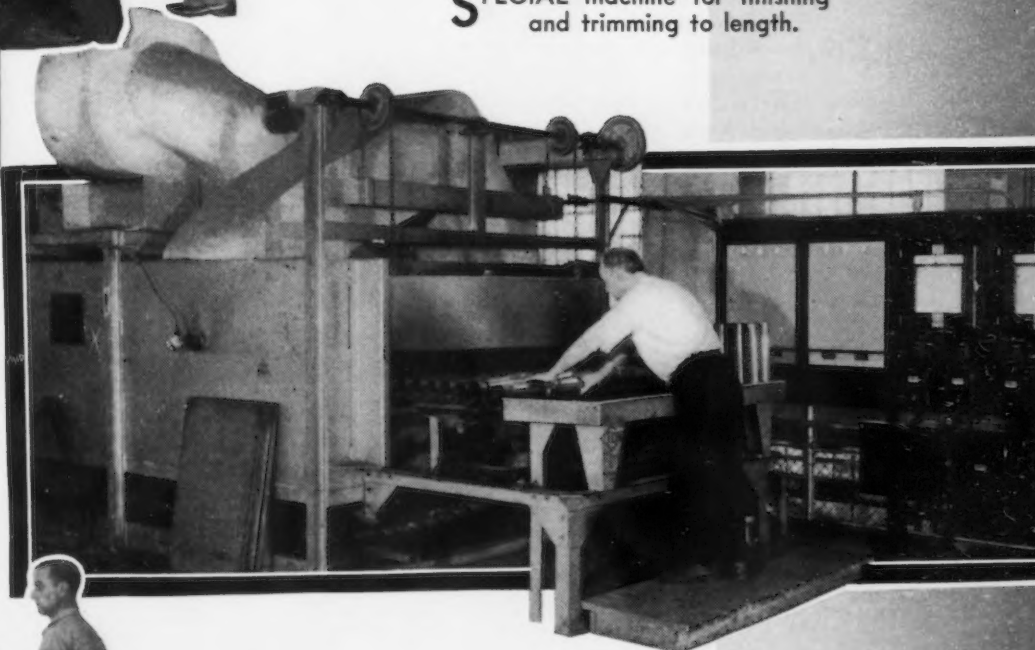
BELOW
FINISH machining the head of the 75
 mm. cartridge case. The machine
 shown is a New Britain-Gridley.



ABOVE
A DRAW press on the heavy
 line. The press shown has a
 70 in. stroke.

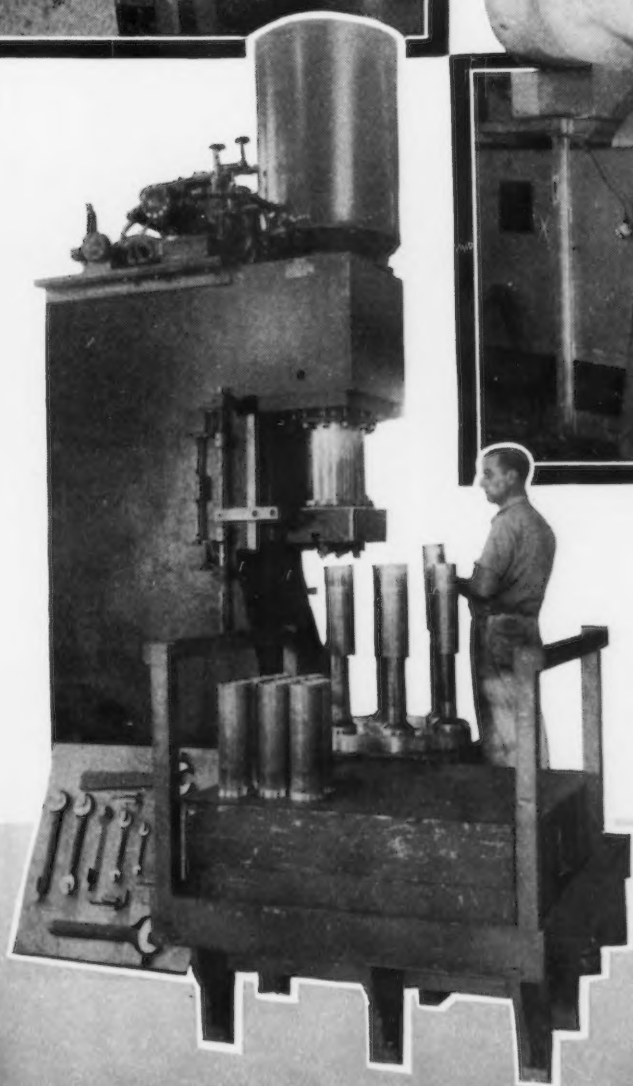


ABOVE
SPECIAL machine for finishing
and trimming to length.



ABOVE
CONTINUOUS type furnace for final stress relief
anneal (500 deg. F. for one hour).

UPPER LEFT
HEADING cartridge cases from the heavy press
line. Heading press shown is of 2000-ton capacity. This capacity is inadequate for some of the
largest cartridge cases in current use.



LEFT
HYDRAULIC stamping press for large cartridge
cases showing dial feed. This press may be ad-
justed to stamp lightly or heavily as desired. (Manu-
factured by Elmes.)

liquid is spilled out of each individual piece. With the larger pieces which are arranged individually by hand, this same object can be obtained by merely tilting the container, and no rumbling is necessary. Since it is apparently impossible to design a furnace basket of large size that can be successfully rumbled, a transfer from the furnace basket is necessary before putting the work through the pickle and wash operation. For this reason, the batch type of furnace loses some of its advantages where small work is concerned, and it is probable that in this field a continuous hearth type of furnace would present certain advantages. There are numerous makers of both of the above types of furnace.

All furnaces, whether batch type or continuous hearth, will be operated at an annealing temperature of approximately 1150 deg. F. for anneal-

ing between draws on artillery cartridge cases. For the anneal prior to taper, and final mouth anneal after taper, the salt pot type of furnace is used, the case being dipped part way into molten saltpeter in the neighborhood of 900 deg. F. This procedure is necessary in order that the mouth of the case be softened for the tapering operation, and after, without disturbing the hardness and other physical properties in the head of the case.

The last annealing operation consists of a final stress relief anneal at 500 deg. F. for approximately 1 hr. For this operation, both the continuous type of furnace and batch type of furnace are successfully used at Frankford Arsenal. In general, the smaller work is fed through the batch type in baskets, while the larger work is placed on the moving belt of the continuous type. This reverses the order in which the types are used for anneal

FIG. 3—A group of representative cartridge cases which have been drawn on the heavy press line at Frankford Arsenal.

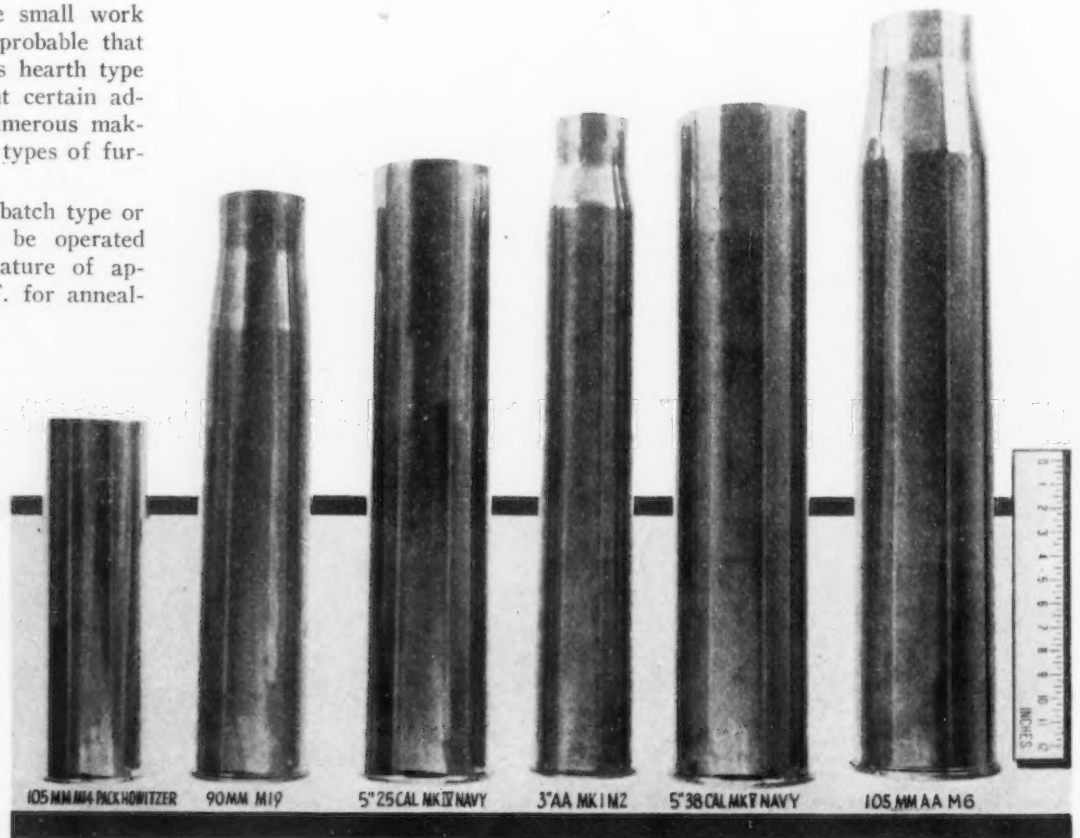
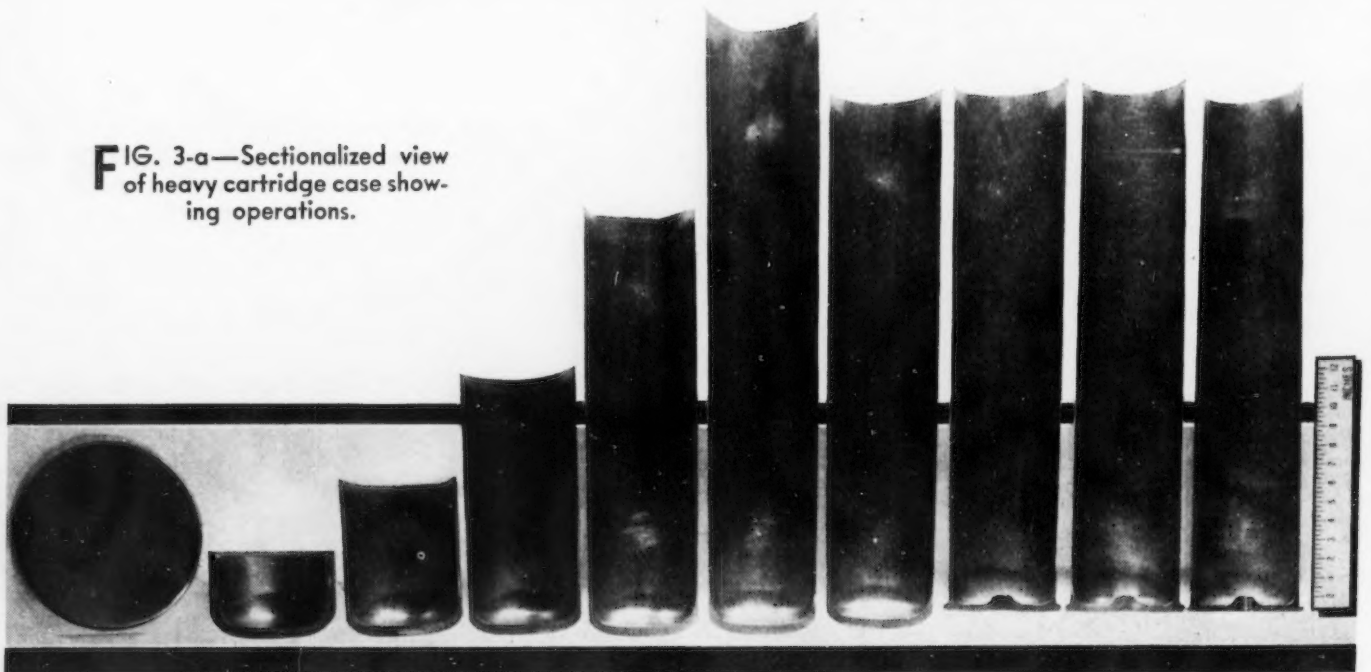


FIG. 3-a—Sectionalized view of heavy cartridge case showing operations.



between draws, and is due to the fact that no quench or pickle operation follows.

When it comes to machining the cartridge case, the prospective manufacturer has a wide choice of equipment. There are on the market special machines for this purpose. Such machines will do the complete operation of finishing the head, drilling and reaming the primer hole, and trimming the case to length, and each machine will take, with certain changes and adjustments, a variety of different sizes of cases.

The production from such machines will run from 2000 or more 37 mm. cases in 8 hr. on the smaller machines, to 600 or 700 cases of the largest sizes on the large machines. The cost per machine will, in general, vary from around \$7,000 for the smallest size to around \$12,000 for the largest size, including tooling, motors, and all other equipment.

If standard machines are preferred, these are available in single spindle models by a number of makers, and in multi-spindle models by such makers as New Britain-Gridley Machine Division of the New Britain Machine Co., the Bullard Co., etc. Costs and production figures can be readily secured from the makers but, in general, it may be said that the standard multi-spindle machines will give approximately $2\frac{1}{2}$ times the production of the special machines referred to above. The standard machines, however, will not trim to length, and a separate setup must be resorted to where such machines are used. A two-spindle, vertical drill press is being used for this purpose at Frankford Arsenal. With such a drill press, a production of 4000 to 5000 75 mm. or other medium sized cases per 8-hr. shift is readily obtained.

And now a word about the pickle and wash tank equipment. The cheapest equipment for this purpose is probably the wooden tank with a lining of lead where the acid pickle solution is to be used. This, however, has a relatively short life, and in recent years the steel tank has largely supplanted it. This steel tank is made from welded sections of plate. The particular tank that contains the acid pickling solution (10 per cent sulphuric acid) is rubber lined to prevent corrosion, and the rubber lining is covered by an acid-proof brick lining joined with acid-proof cement. This lining of brick is required to prevent abrasion and also to act as a temperature gradient, since the acid is maintained at

PICKLE and Wash Tank Equipment for the Production of Cartridge Cases. These Are the Set-ups Employed at Frankford Arsenal.

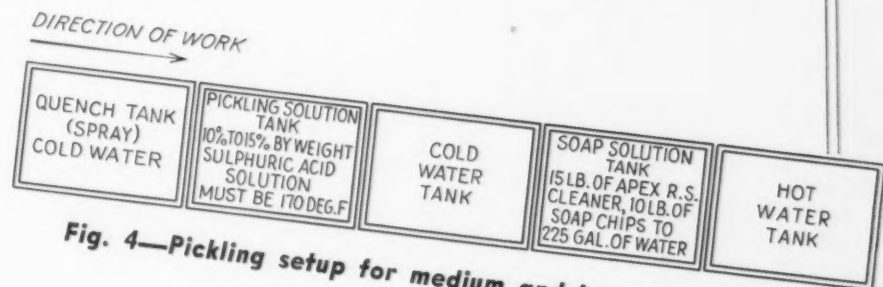


Fig. 4—Pickling setup for medium and heavy press lines.

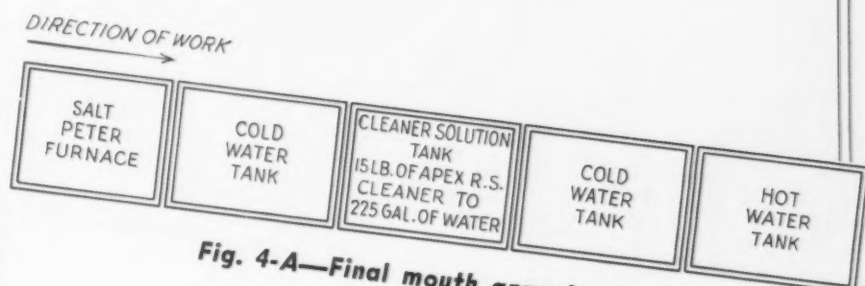


Fig. 4-A—Final mouth anneal setup.

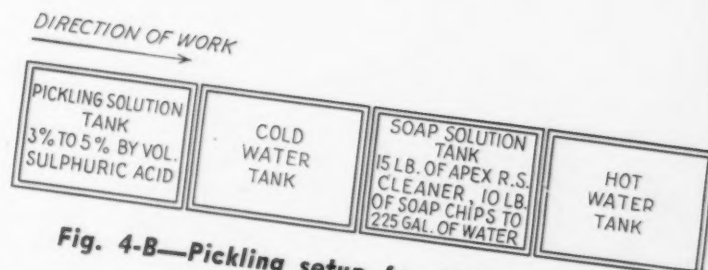


Fig. 4-B—Pickling setup for light press line.

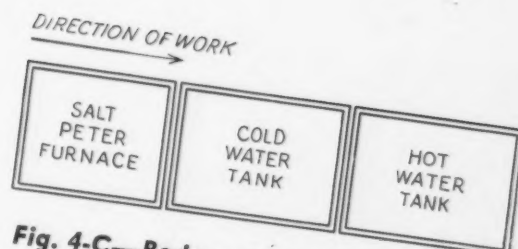


Fig. 4-C—Body anneal for taper setup.

TABLE III—HEAVY PRESS LINE
(3 in. A.A. cases and larger)

Operation	Machine	Length of Stroke	Strokes per Minute	Tonnage* Required	Remarks	Cost Estimate Completely Installed
(1) Cup and wash	crank press	16 in.	15	400		\$25000
(2) Anneal and cool	recirculating batch type				1150 deg. F.—2000 lb. per hr. max. with three extra baskets	6000
(3) Pickle and wash	tanks				10 per cent H ₂ SO ₄ at 170 deg. F.	
(4) First draw and wash	hydraulic press	50 in.	35 ft. per min.	200	hydraulic	25000
(5) Same as operation No. 2					1150 deg. F.—2000 lb. per hr. max.	
(6) Pickle and wash	same as operation No. 3				10 per cent H ₂ SO ₄ at 170 deg. F.	
(7) Second draw and wash	hydraulic press	60 in.	35 ft. per min.	150	hydraulic	23000
(8) Anneal and cool	same as operation No. 2				1125 deg. F.—2000 lb. per hr. max.	
(9) Pickle and wash	same as operation No. 3				10 per cent H ₂ SO ₄ at 170 deg. F.	
(10) Third draw and wash	hydraulic press	60 in.	35 ft. per min.	125	hydraulic	21000
(11) Anneal and cool	same as operation No. 2				1125 deg. F.—2000 lb. per hr. max.	
(12) Pickle and wash	same as operation No. 3				10 per cent H ₂ SO ₄ at 170 deg. F.	
(13) Fourth draw and wash	hydraulic press	80 in.	35 ft. per min.	75	hydraulic	19000
(14) Trim	Henderson, or equal					
(15) Head and indent	hydraulic press	6 in. max.		3300	hydraulic—dial feed	65000
(16) Anneal for taper	saltpeter furnace				950 deg. F.—2½ min.	
(17) Taper	hydraulic press	45 in.	60 ft. per min.	125	dial feed	30000
(18) Machine head and trim	Coulter semi-automatic					
(19) Tap	Haskins	3 in.			only required on certain cases	
(20) Final wash	tanks					
(21) Stamp	hydraulic	6 in.		40	hydraulic—dial feed	10000
(22) Relief anneal	furnace				conveyor type; 50 min. at 500 deg. F.	
(23) Inspect and pack	benches					

* On crank type presses this figure represents *midstroke* capacity.

a temperature of 160 deg. to 180 deg. F. for the pickling operation. The entire pickling line, exclusive of the quenching tank, where such a tank is required to bring work from furnace temperature to room temperature, consists of the following:

- (1) Pickling tank.
- (2) Cold water rinse tank.
- (3) Soap wash tank.
- (4) Hot water tank.

It is considered desirable that the cold water rinse tank adjacent to the acid pickling tank be of the same construction as the acid tank, since a certain amount of acid is carried over. A sketch of the setup as used at Frankford Arsenal appears in Fig. 4.

So much for the equipping of the cartridge case shop. As regards the tooling and the details of operation, these have been covered in an excel-

lent manner in articles that have appeared recently, particularly the articles by F. J. Lerro in the February, 1940, issue of the *Modern Industrial Press*, and a recent issue of *American Machinist*. Other articles of interest are that of Sergius D. Broetzkoos appearing in *American Machinist*, Feb. 7, 1940, and that of J. D. Devons which appeared in the *Metal Industry*, Apr. 9, 1937.



THE present scheme for training unemployed men for work in the British armament industries really dates back to the end of the last war, when various schemes for training disabled ex-service men, so as to fit them for a return to peace time industry, were organized by the Government. These were, however, purely emergency measures and no properly coordinated plan for industrial training was evolved until several years later.

It was not until 1925 that the first Government training center was established with the object of helping unemployed young men who, owing to the economic depression, had little or no opportunity of learning a trade, to fit themselves for a steady and useful life. In its early stages the scheme was specially adapted to meet the needs of men from the special and depressed areas in the north of England, whose prospects of early employment in their home areas were not good, but who could, after receiving the necessary training, hope to secure employment in other parts of the country. More recently recruiting for the centers was thrown open to suitably employed men from all over the country and the whole scheme has been expanded to provide training for 30,000 men every year in 14 centers strategically situated throughout the main industrial areas of Great Britain.

Before the outbreak of war the training given to suitable applicants was quite catholic in range and scope and men had a wide choice of trades. Since September, 1939, however, drastic changes have been made in the curriculum and all the centers are now concentrating on training semi-skilled men who can play a useful part in increasing the output of vital

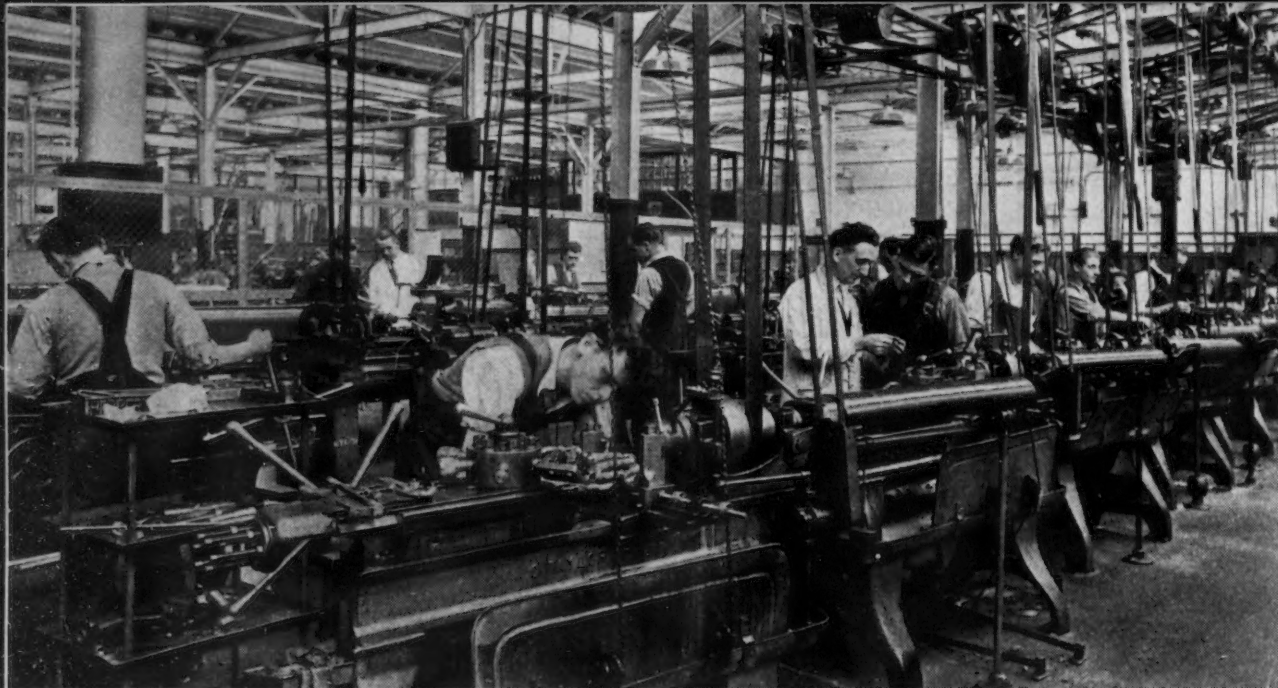
industries. Training is given in draftsmanship, fitting, instrument making, machine operating, panel beating and sheet metal working, electric and oxy-acetylene welding, gas and hot water fitting and in coach body building.

Men at the centers are expected to take this training as the serious thing that it is. They must keep to regular hours and workshop practice in "clocking in and out." The whole atmosphere is that of the factory and the instructors encourage men to regard themselves as employees in an engineering works and subject, therefore, to the usual rules and regulations of the modern workshop. The length of the course is normally three to five months, but it varies according to the progress made by the individual and the kind of work he is going to do. The training consists of an intensive course of practical and theoretical instruction by skilled tradesmen.

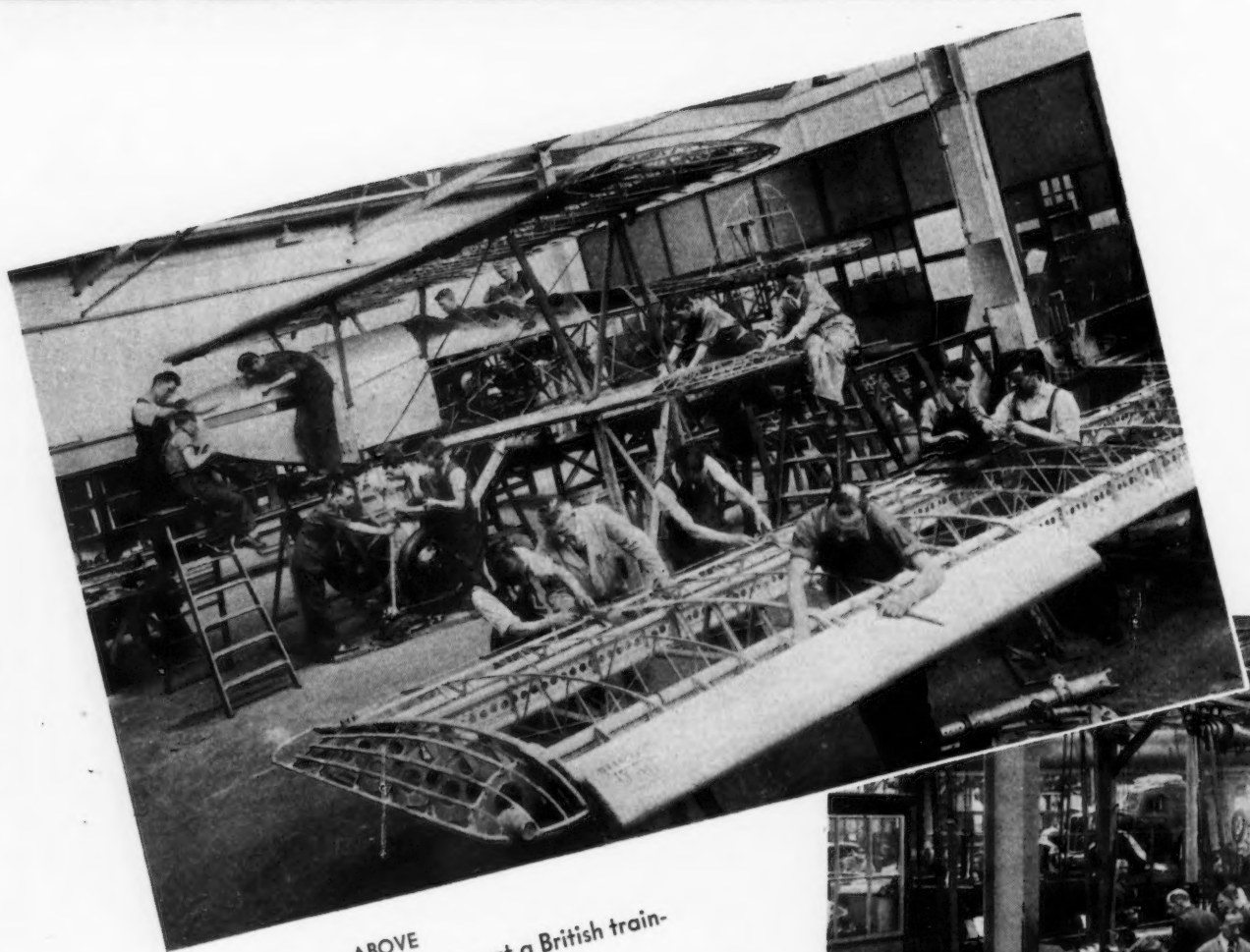
The latest types of machines are installed at the centers and both equipment and methods are kept up to date, so that trainees will be able to go into industry with the latest knowledge. In the case of machine operating, now one of the most important courses, full instruction is given on all types of modern production machines in turning, milling, grinding, capstan operating, shaping, drilling, etc. The men are also taught how to work from blueprints and to fine limits of accuracy by means of the micrometer. Practical work on lathes is supplemented by lectures and the men are encouraged to make good use of notebooks for drawing tools, so that they become thoroughly conversant with the various shapes and sizes, etc. The fitting course teaches up-to-date workshop practice, care and use of tools,

TRAINING UNEMPLOYED FOR ARMAMENT INDUSTRIES

By JOHN S. TREVOR
Staffordshire, England



AT LEFT
MACHINE
 operating
 shop at a British
 Government
 training center,
 Walford, Herts.



ABOVE
RIGGERS at work making a plane at a British train-
 ing center.

RIGHT
FULL instruction is given in training centers on all
 types of modern production machines in turn-
 ing, milling, grinding, capstan operating, shaping,
 drilling, etc.



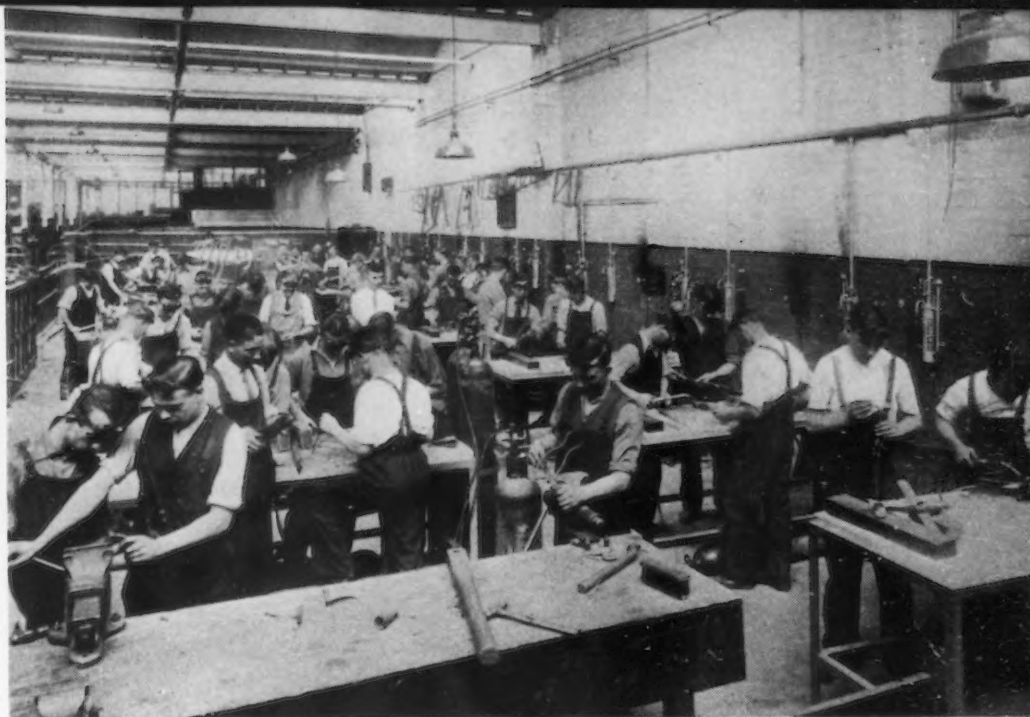
jigs, templates, scribing blocks, micrometer and vernier gages, etc.

A very important course at the moment is instrument making. This is similar to that of fitters, but the work is naturally lighter and finer and more specialized and includes work on small precision machines. Men for this type of work must necessarily possess excellent eyesight and applicants are examined by oculists before acceptance.

Two popular courses at the moment are panel beating and sheet metal working. Full instruction and practice is given in setting out and making up all types of tanks, cisterns, cowls, body work for cars and aeronautical components, rolling and shaping, edge wiring, fitting, soldering and riveting.

The courses in oxy-acetylene welding and electric welding are very comprehensive. The former covers the use of blow-pipes and gages and the maintenance of generators. Practice is given in welding various kinds of metals, including low and pressure welding and oxy-acetylene cutting. The course in electric welding comprises everything from preparing the weld to reinforcing and knitting it together, as also the handling of the equipment and the striking, maintaining and breaking of the arc. Practice is given on various metals and in the use of direct and alternating current welding parts.

Metal polishing, a very important course of direct interest to Britain's aircraft industry, includes the care and



THE course in welding is very popular and a very large number of welders are now required by the aircraft and shipbuilding industries.

maintenance of machines and bobs, use of abrasive materials, glazing for nickel plating and scurfing.

The hours of training are usually 44 hr. a week and these are now being worked in shifts from 7 a. m.-2 p. m. and others 2 p. m.-10 p. m., so that the maximum number of men can be handled in any one center. Men take their turn week by week in working the early morning or late night shifts.

Allowances are paid to men while they are in training. Those who have to leave home to attend the center are provided with the cost of lodging to the extent of \$3.80 and \$1.20 per week pocket money. A married man now receives \$5 for himself, of which \$3.80 goes to the cost of his lodging; \$5.40 for his wife; 80c. for each of his first two children and 60c. for each subsequent child. For example, married men with two children receive each week, while in training, \$12, of which \$3.80 goes for the payment of lodgings. In addition, each man in training receives a free mid-day meal and free fares to the center and to his place of employment after training.

If a man attends a center within reasonable traveling distance of his home, he receives unemployment insurance benefit, if he is entitled to it, or an equivalent amount per week if he is not, plus a personal allowance of 40c. per week. This amounts to \$3.50 for self, \$2 for wife, \$1 for first child and 50c. for others. He also receives traveling expenses. (Amounts payable are subject to increases according to cost of living.)

Other facilities offered to men in

training include four days of leave to those taking a six months' course, after four and one-half to five months of their period of training have elapsed. Men who have satisfactorily completed a course of training at a Government training center and who are either placed or find work themselves in the occupation for which they have been trained, are also able to receive assistance to meet the cost of removing their dependents and household effects to the area in which they are employed.

Since May, 1940, the field of recruiting for the training centers has been greatly extended. Suitable men who are now in employment, but who are not reserved for military service by the Schedule of Reserved Occupations, are now being invited to volunteer for a course of training. All suitable men, aged 18 or over, who have not already registered under the National Services (Armed Forces) Act, may be accepted for all training trades except coach body building, gas and hot water fitting and machine operating, for which trades only men aged 25 or over and men under 25 who have been placed in Grade IV by the medical boards operating under the National Services (Armed Forces) Act, may be accepted. A man registered for military service under the National Services (Armed Forces) Act may be accepted for training only if he has been classified as Grade III or IV by the medical board. Men exempt from military service by the Schedule of Reserved Occupations are not normally accepted for training.



but exceptions are being made for certain trades badly hit by war conditions. Thus compositors, normally exempt from military service at 30, are badly hit by restrictions placed on the use of paper and a large number of unemployed linotype and monotype operators are now being trained for machine operating and light as-

sembly work. These men are particularly well fitted for all engineering jobs which call for finger dexterity and a quick intelligence. Another class of entrant is the unskilled man at present employed in engineering industries. He is offered the opportunity to re-enter industry as a semi-skilled machinist, etc., with 100 per

cent better prospects of pay and advancement. The whole scheme has been reorientated and made very flexible so as to absorb idle or wasteful labor into vital industries.

In addition to enlarging the capacity of the Government training centers and improving the conditions of men under training in those centers, the British Minister of Labor and National Service is now taking steps to insure that technical colleges and schools are put to greater use and that other establishments, such as maintenance shops, are used wherever possible to supplement the work of the Government training centers.

The avowed aim of the Minister of Labor in regard to these training centers is to supply the metal working industries with a constant flow of semi-skilled labor. Every man who passes out of a training center, and all have to pass a "placing-test," is able to earn up to \$20 a week and, nowadays, trained entrants are adding at least 50 per cent to their earnings through bonus and overtime. The centers really act as an apprenticeship and also weed out unsuitable applicants who, if they were absorbed into engineering industries, might cause dislocation. Proof that the centers are doing excellent work is afforded by the fact that formidable waiting lists of jobs have accumulated for the men who have been trained.

No Government scheme has yet been developed for the training of women in industry, but individual concerns have, for some months now, been encouraged to enlist suitable women and to organize their training so as to fit them for simple repetition work in engineering factories. It is now realized, however, by the Ministers of Labor and Supply that private enterprise is not sufficient and plans are being developed for a national scheme whereby suitable women can be absorbed fairly rapidly into industry. Part-time work for women is also advocated by the Minister of Labor, so that married women may be able to take the place of those permanently engaged in large engineering factories who are enjoying a few hours' well earned rest. The unions have generally agreed to the infiltration of untrained women into the engineering industry via training centers of some kind, and the next step in the coordination of any large scale scheme is a concrete plan put forward under the Government's Emergency Powers Act. It should be realized that the Minister of Labor has the power to conscript unemployed and even employed labor when and where he thinks necessary.

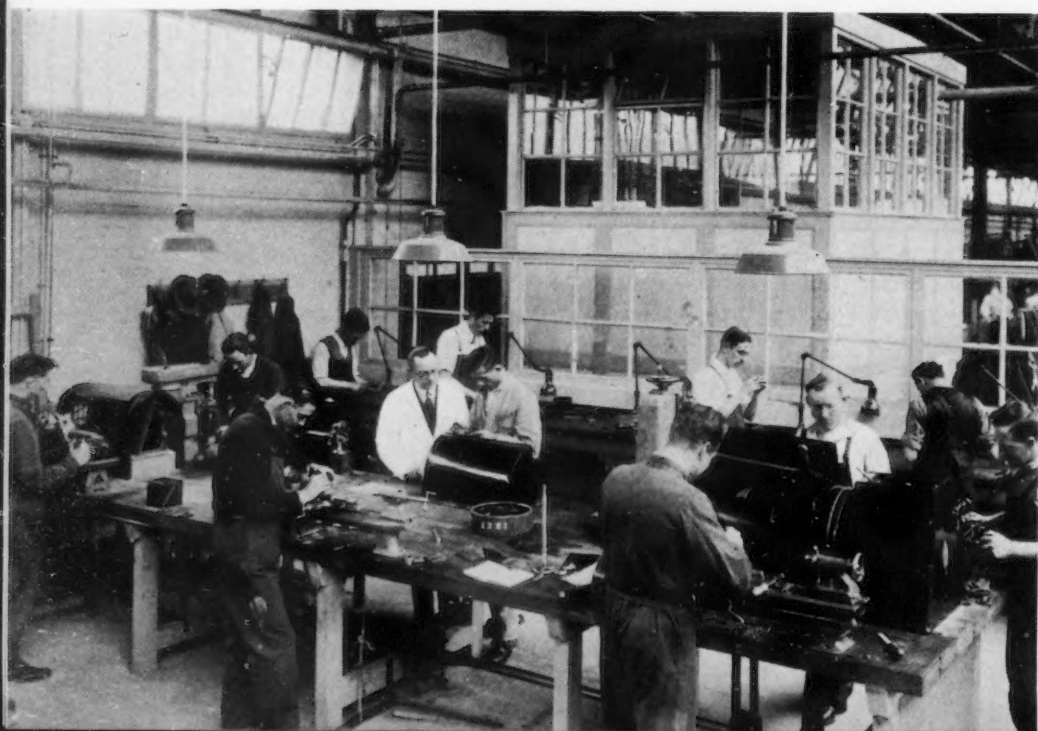


BENCH fitters at the Letchworth training center. Supervision of work is very thorough and the general standard high.

o o o

CLOSE-UP study of fitters at work in a Government training center.

o o o



THE war has focused the attention of manufacturing circles in this country on the production of ammunition for artillery, anti-aircraft, and tank defense. The safety measures taken by the United States today naturally embrace the manufacture of shell forgings on modern equipment that will assure not only faster but, so far as possible, better and cheaper production.

But, whereas the United States holds first place in the world in the manufacture of machine tools, the production of shell forgings has lagged far behind until very recently. For the most part, production has been obtained almost exclusively on hydraulic piercing and drawing presses or on mechanical horizontal forging and upsetting machines.

Until a short time ago the manufacture of artillery shell bodies was primarily a job for hydraulic presses. By that method heated round or square-section billets are pierced in so-called piercing pots on vertical hydraulic piercing presses and then drawn on vertical or horizontal hydraulic drawing presses. Wherever feasible the larger shells are drawn on horizontal drawing presses in one heat.

The production of shell forgings on mechanical forging and upsetting machines is quite different from that employed on hydraulic presses. Horizontal forging and upsetting machines originated in the United States, and their design and method of operation are generally known. Their function is to upset and shape heated bar stock of a given section. Solid bodies can be formed on these machines as well as bodies which, by means of appropriate tools such as mandrels, are either pierced or pierced and upset simultaneously.

The method of producing shell bodies on mechanical forging and upsetting machines is approximately the following: A round steel bar, in volume equal to that of *two* shell bodies, is heated at one end. This end is then progressively pierced in the horizontal forging machine in three, four, five, six or more superimposed dies. The piercing operation is thus accomplished by forcing the material into the length of the shell by several operations on the different mandrels until the required shape is obtained, a process which the hydraulic press achieves in one piercing and one drawing operation. Then, after finishing one end, the bar is heated at the other end, whereupon the same operations are repeated. Thus two shells, which have to be cut apart, are made from each bar. The procedure is exactly the same for shells up to 180 mm. in diameter, which require as many as seven operations and two heats.

The shell forgings thus obtained entail waste of material and it has been said that the structure of the steel is not so good as that of shell bodies made on the piercing and drawing presses. Another objection mentioned is that the rate of production is not fully satisfactory.

The output of conventional horizontal forging and upsetting machines is shown in the following table:

Size of shell, diameter in mm.	75	125
Size of bar, diameter in mm.	75	95
Length of bar (2 shells), in mm.	648	990
Diameter of forged shell, in mm.	79.4	133.25
Number of operations.	5	5
Production rate per hour	60 to 100	50 to 60

These figures are moderate. In addition, especially for larger shells,

SHELL FORGINGS HIGH SPEED AND ACCURATE PRODUCTION WITH THE BALDWIN-OMES MECHANICAL PRESS

By A. G. HOCHBAUM

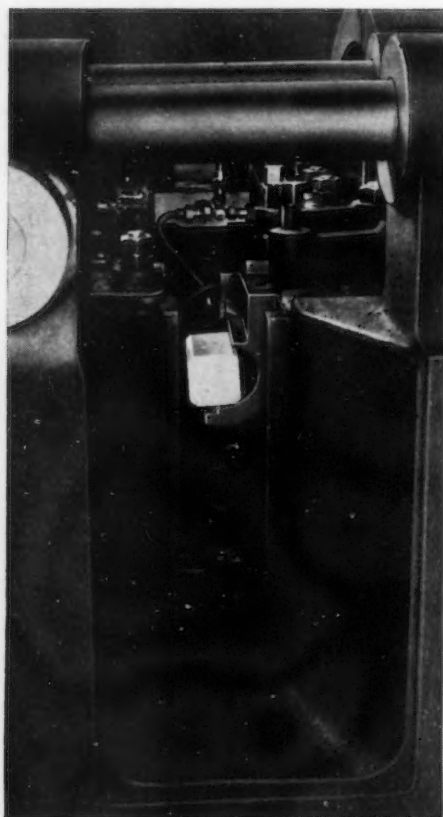
Baldwin Locomotive Works
Eddystone, Pa.

handling facilities must be provided for the purpose of moving the shell forgings to the next die after each operation.

Baldwin-Omes Machine

Based on the principle of the horizontal forging machine, a new and patented unit, which is a combined mechanical piercing and drawing press, has recently been developed in Europe and particularly in England. It is known as the Baldwin-Omes shell forging machine.

The operation of this machine can be outlined as follows: A square-section billet is inserted into the opened, patented split die, where it rests on a lower surface, and a foot operated air valve closes the die. (See Fig. 1.) With the die closed a piercing mandrel, operated from the crankshaft, enters the hot square-section billet and expands the material toward the walls of the die. When the die is opened the pierced shell forging falls clear and it is then put on a drawing mandrel. For shell forgings up to 125 mm., or 5 in., the drawing machine is built on and combined with the piercing machine; whereas in the case of larger shells, from 125 mm. upward, the drawing machine is separated from the piercing machine for reasons of greater efficiency, although the working method itself is not changed. (See Figs. 2 and 3.)



PRODUCTION ON HYDRAULIC PRESSES

Size of shells, diameter in mm.	75	105	125	150
Size of square section bar, in mm.	70	115	120	140
Length of bar, in mm.	175	235	275	330
Diameter of forged shell, in mm.	81	114	137	170
Number of operations	2	2	2	2
Production rate per hr.	60 to 75	50 to 60	40 to 50	30 to 35
Approximate rejections due to eccentricity	10%	10%	10%	10%

PRODUCTION ON BALDWIN-OMES MECHANICAL PRESSES

Size of shell, diameter in mm.	40	75	105	125	150
Size of square section bar, in mm.	40	70	115	120	140
Length of bar (1 shell), in mm.	122	180	235	270	330
Diameter of forged shell, in mm.	42	78	110	131	160
Number of operations	2	2	2	2	2
Production rate per hr.	200 to 250	160 to 180	110 to 130	95 to 115	60 to 70
Approximate rejections due to eccentricity	0.5%	0.5%	0.75%	1%	1 to 1 1/2 %

After completion of the drawing operation (See Fig. 4) the shell forging is complete with inside finish bore requiring no internal machining, and with a minimum machining allowance on the outside due to the fact that the shell forging is made in two operations following each other in rapid succession. (In Fig. 5, "A" shows the forging after the first, or piercing operation, and "B" the forging after the second, or drawing operation). As a result of the drawing of the material through rings a desirable structure of the steel is obtained with uniform wall thickness throughout the length of the forging.

In order to increase the capacity of the smaller machines two or three piercing mandrels and dies and two drawing mandrels are provided, so that each piercing mandrel and drawing mandrel can be used in rotation, to prevent wear and to give the mandrels time to cool, thus prolonging the life of the tools and dies. Both air and water are utilized for cooling the dies and mandrels.

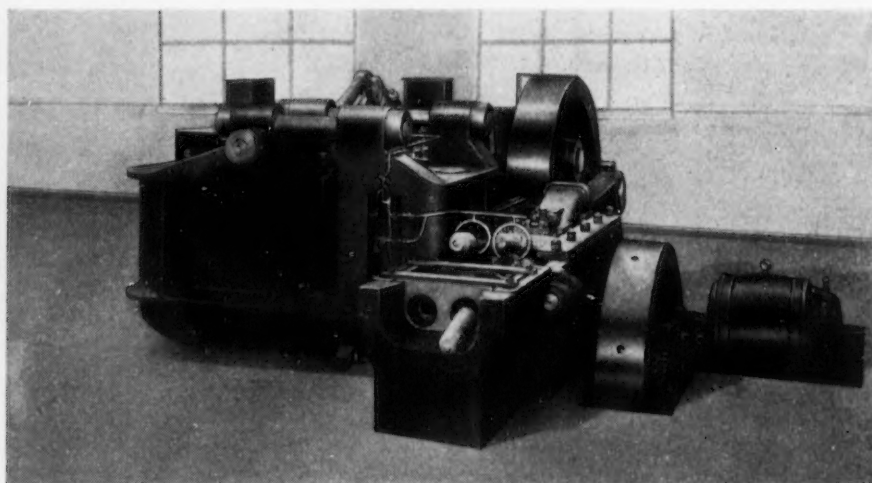
As a result of the use of a square-section billet and the fact that the dies when closed are absolutely circular, the billet is squeezed at its four beveled corners the moment the jaws close. The dies are fitted with a guide

LEFT
FIG. 1—Heated billet in one of the split dies.

o o o

BELOW

FIG. 2—The medium sized machine is used for piercing and drawing shells from 3 in. to 5 in. in diameter.





bushing of high grade steel which guides the mandrel, and since only linear motion takes place the mandrel enters the square-section billet in the center, thus producing a concentric shell forging.

The medium-sized machine, illustrated by Fig. 2, requires $7\frac{1}{2}$ sec. for a stroke, on the piercing part as well as on the drawing part. This would indicate a theoretical capacity of 480 forgings of 75-mm. shell bodies per hr. In practice, however, if only every third stroke is utilized, which is quite feasible, there obtains a production of 160 forgings per hr. for a 75-mm. forging. This figure has been exceeded in practice, however.

Another advantage of the Baldwin-Omes machines is their long stroke and the fact that they can be used as conventional forging machines, since the drawing machine can readily be uncoupled from the crank pin of the driving wheel. Thus when the emergency has passed these units can be used as universal forging machines.

The tables on opposite page show the production of hydraulic presses

ABOVE
FIG. 3—The large machine is built in two units, one for piercing, the other for drawing.

o o o

RIGHT
FIG. 4—The drawing end of the large machine, showing four diminishing diameter ring dies in use.



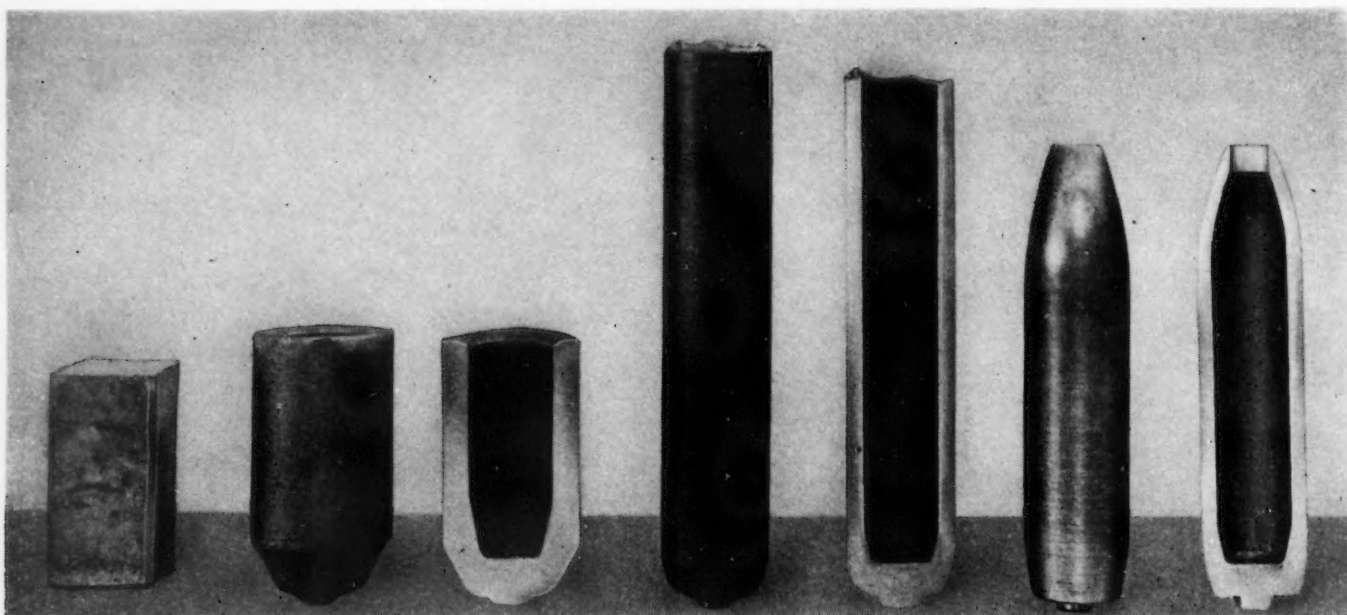


FIG. 5—Stages in the manufacture of a shell forging on the Baldwin-Omes machine. A square-section billet is pierced and drawn. Nosing is possible though not generally economical.

and the production of Baldwin-Omes mechanical shell forging presses.

The smallest machine is designed chiefly for making explosive shells such as those used for air and tank defense; that is, shells from about 35 mm. up to about 75 mm. The medium-sized machine, illustrated by Fig. 2, is used for all types of shell forgings from 75 mm. to 125 mm. (3 in. to 5 in.), and the large unit, illustrated by Fig. 3, handles forgings from 125 to 180 mm. (5 in. to 7½ in.).

Adequate facilities for billet heating are a natural prerequisite for high production.

In conjunction with these machines

the European preference has been for automatic pusher type furnaces, preferably of the two row type. But furnaces of the rotary type, of which there are several good designs in this country, are likewise acceptable. The main requirement is that the furnace have a capacity sufficient to heat the billets to 2150 deg. F. at the accelerated speed made necessary by the new high speed machines.

No special devices are employed for descaling. Experience shows that merely throwing the billet against heavy plate is sufficient to remove most of the scale. Any which remains can quickly be cleaned off with a hand

scraper. The scale formed after the first operation is cleared away by the air and water cooling. Since the inside of the forging is finished it is only in the case of the larger forgings that sand blasting is occasionally resorted to. The finished forgings are usually cooled in moist sand.

To the demand that the tempo of defense preparations be accelerated these forging machines offer an encouraging answer. By cutting forging time in half, economizing on steel, eliminating internal machining and reducing outside finishing operations, they are speeding up a major section of the defense program.

IN the mass manufacture of aircraft, submarines, torpedo boats, tanks, etc., two possible methods are open for speeding up production. One is the well developed use of tools and dies and enormous punching machines as used in the automobile industry. The other is to duplicate templets and parts accurately and rapidly by some low-priced method. The first method is only possible where the machine manufactured is not subject to rapid changes in model or design. The second is a vital necessity for many industries that require only a limited number of machines because changes in structure, principle, and design are taking place almost continuously.

With the author's processes of sensitizing metal, it is possible now to secure any number of accurate photographic images on the surface of sheets up to 10 x 12 ft., rapidly and economically. With this process installed in a large metal fabricating plant, only one major change is necessary to bring about a speed and accuracy of production that was hitherto considered impossible. This change is to have the designing, engineering and drafting departments make complete full scale detailed drawings on translucent sheets supplied by the author's company. These sheets have an excellent drawing surface for pencil, pen or brush.

In the manufacture of a submarine, boat, or airplane, the loft system remains as before except that the draftsman, instead of drawing on paper, draws either on specially prepared metal sheets supplied by the Carter processes or on the special translucent sheets. The reason for using these two mediums is to completely eliminate all shrink or stretch and to maintain positive accuracy from the outset. When the detailed full scale drawings are completed, they not only show the lines, contours, and bending shapes, etc., but they show space between rivets, bolts; in short, every

detail necessary for accurate fabrication.

When the drawings are completed the production department has already ordered the sensitized metal sheets in the necessary numbers to make up the machines. The translucent sheet with its full scale drawing now becomes the actual photographic negative. These drawings are placed over the sensitized metal and, with a quarter of a second's exposure and three minutes' developing and fixing, the tool departments, fabrication departments and the assembly departments have any number of metal sheets that may be immediately fabricated into the finished machine.

The Carter processes were first used in England in the year 1928 for the making of templets in the manufacture of guns, automobiles, and ships. With the complete success of the method on copper, steel, brass, aluminum, plastic, wood, cloth, etc., the engineers developed the idea of not only using it for templets, but in duplicating fixtures, tools, jigs and parts, for all types of metal fabrication.

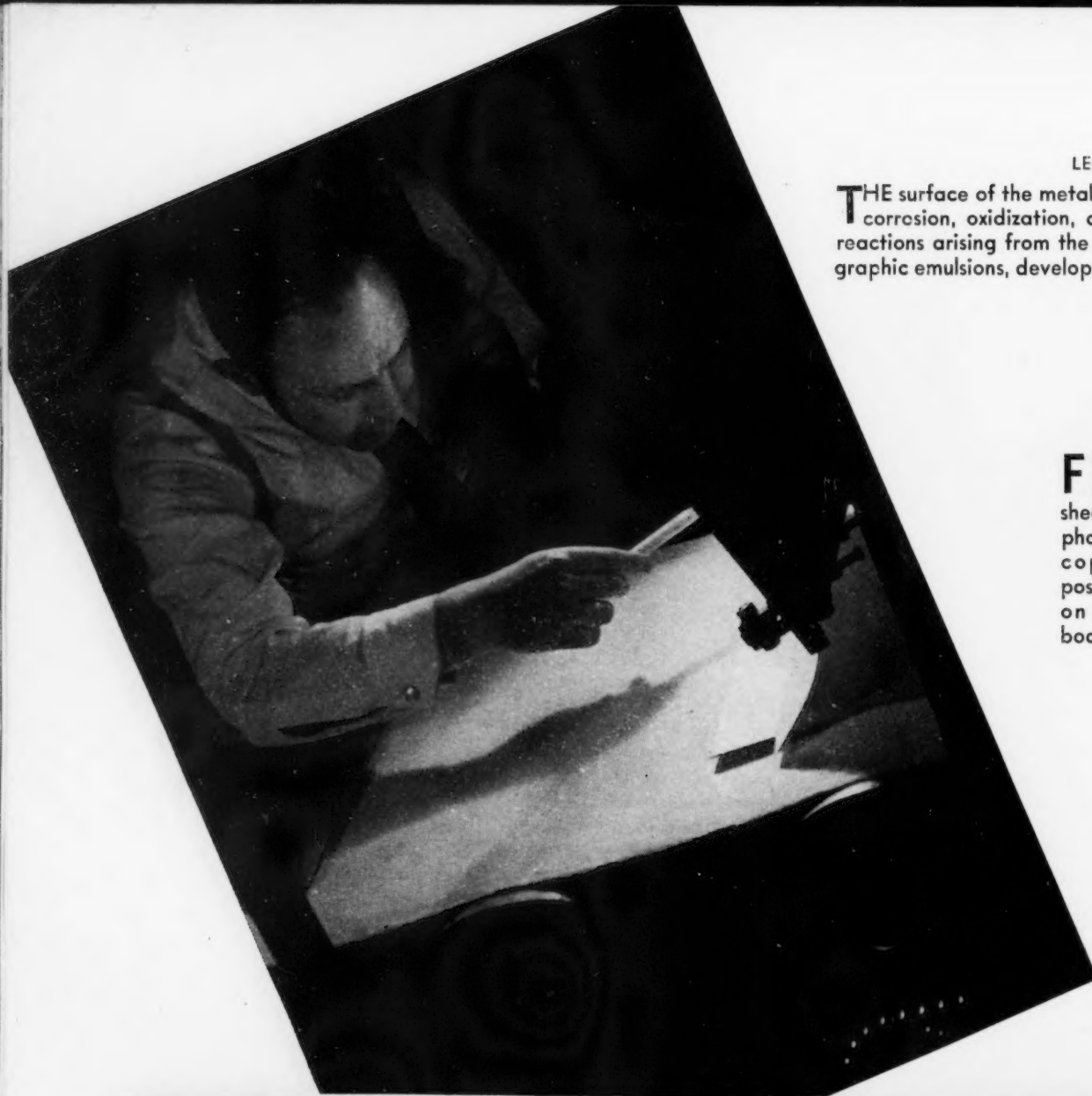
In the making of a boat, plane, or tank, the first step toward making a new model is the templet development for the body group, and the releasing of the layout of the body lines. When this is complete, it becomes a master reference permitting the next step to be made, which is that of transferring of lines and contours from the loft tables onto the translucent sheets used in the process. These sheets when finished constitute individual full-size layouts of the major transverse bulkheads, interspar beams, or other major or minor details of the structure. The detailed parts of these structures appearing in the planned view will be shown on these full-size templet drawings on the translucent sheets.

These translucent sheets with the full scale drawing in pencil over surfaces as large as 10 x 12 ft. now become the actual photographic negative

SENSITIZED METAL

*New method of laying
out designs speeds
armament manufacture*

By DR. ROBERT W. CARTER
Metal Photo-Drafting Co., New York



LEFT

THE surface of the metal is inhibited to prevent corrosion, oxidization, crystallization, or other reactions arising from the use of sensitive photographic emulsions, developers, or fixing chemicals.

o o o

RIGHT

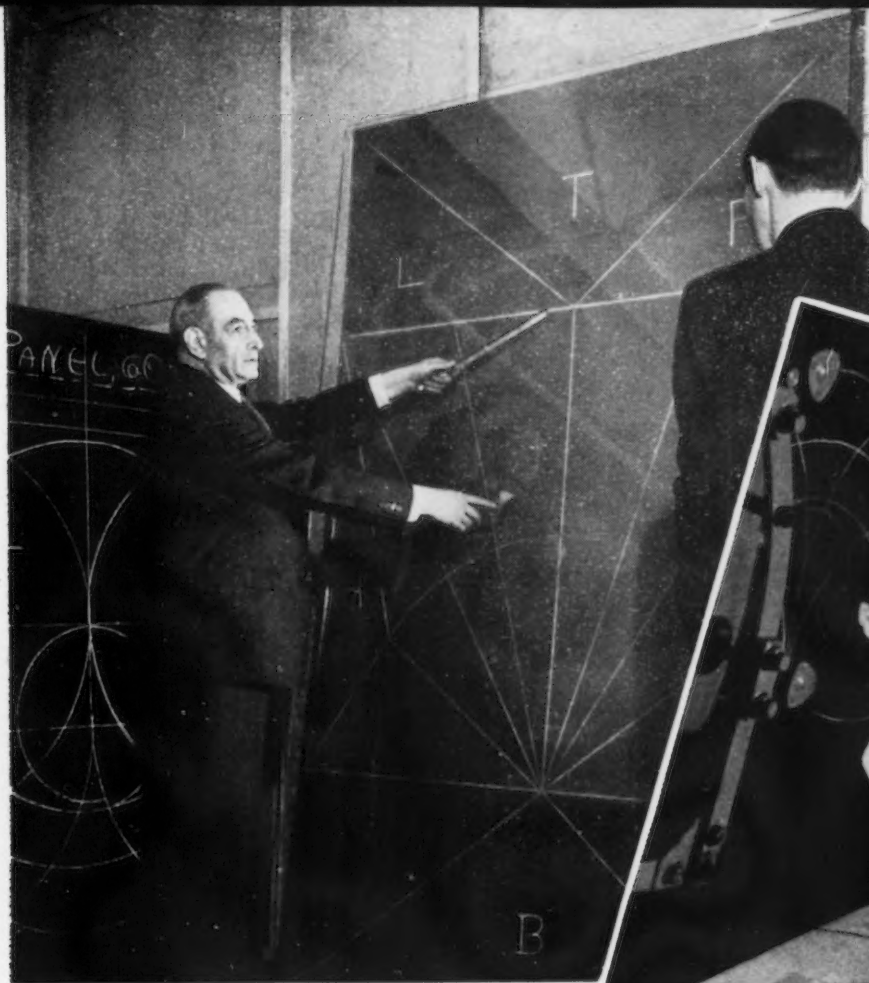
FULL scale drawings on 10 x 12 ft. translucent sheets used as negatives to photoprint any number of copies with speed and positive accuracy directly on the sheets used for boat, tank, plane, or other fabrication.

o o o

BELOW

HIGHLY sensitive photographic emulsions being coated on duraluminum, stainless steel, copper, wood, plastic, or other flat surface.





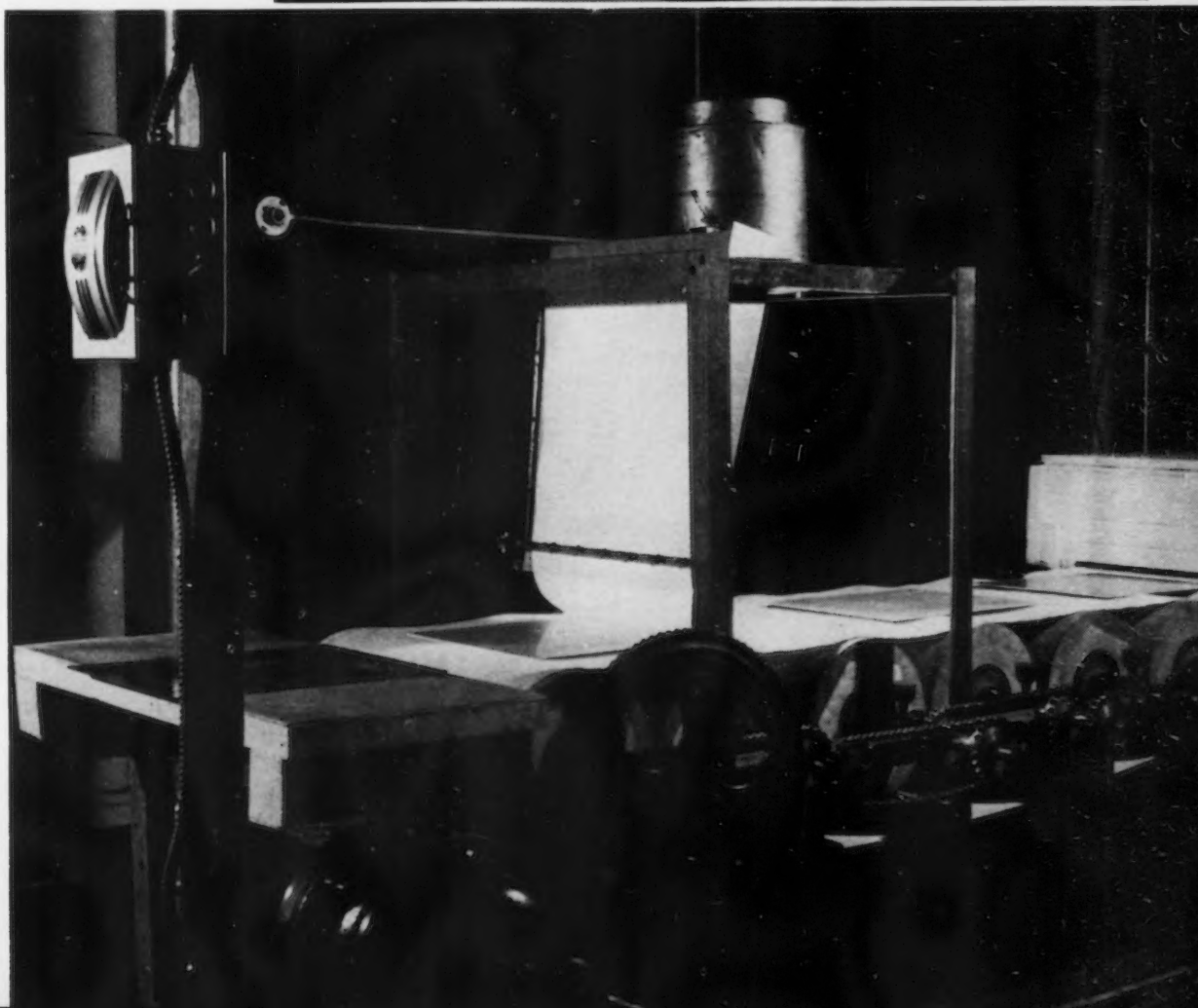
RIGHT

THE building of templets, jigs, fixtures, tools, etc., directly upon the photographic lines on the metal from the drawing supplied by the engineering department on transparent material used by the Carter processes as the original negative.



RIGHT

MACHINES to sensitize metal and other sheets up to 10 ft. wide are being built by the Metal Photo - Drafting Co. for installation in large metal fabricating plants throughout the country.



with which any number of photographic prints may be made on sheets of sensitized metal, wood, or other working material.

By means of these processes, the work of photoprinting from the translucent sheets onto duraluminum, steel, plastic, wood, cloth, or other surface, is the work of a few seconds. When the photoprints are completed, they are the templets that constitute the sole means of reference for the shops in the fabrication of parts, and in the assembly of parts into the completed bulkhead or beam. All shops, whether they are concerned in the building of tools, jigs or fixtures or whether they are engaged in the manufacture of details or the operations of assembly, must at all times refer to these templets for information such as contour, radii, length, width, bolt size and spacing, rivet size and spacing, bevels and slopes, etc.

The old system of drafting on paper in half or quarter size and then having the metal fabricators translate the drawing to metal is completely eliminated. The new processes rapidly supply any number of full scale com-

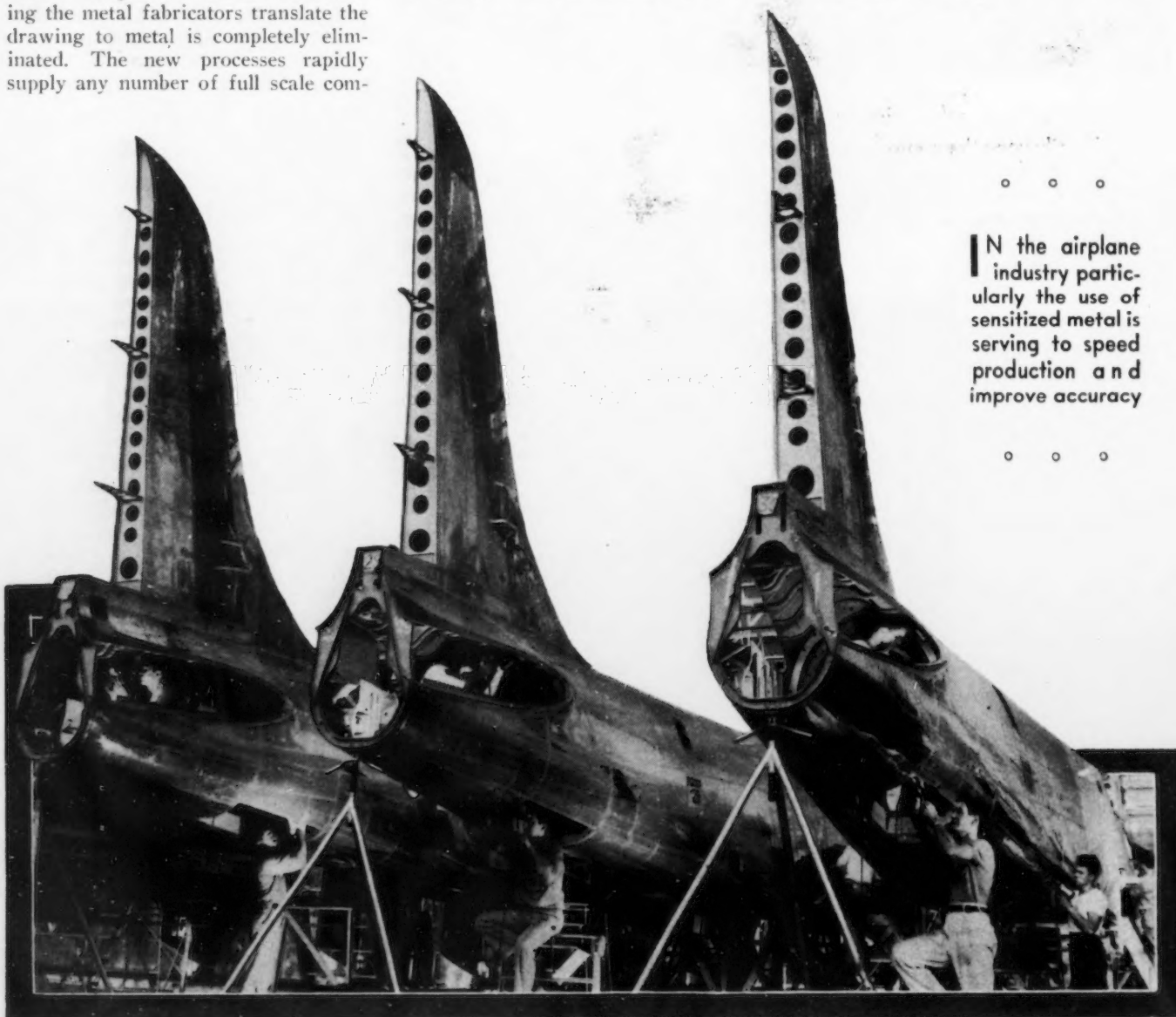
pletely detailed photodrawings on metal. The business of the fabrication department is to rapidly and accurately follow the lines, contour, bending and punching instructions on each sheet. Thus the finished structure is rapidly and accurately completed because the photographs on metal coordinate all branches of production.

The photodrawings are not confined to main-structure templets, but may be individual half-size templets of any part of the structure of a plane, boat or tank. It will become obvious that with these master photographic templets on metal as a direct source of information for tool making, jig and structural work, riveting, welding—in short, every step in fabrication and assembly—are speeded enormously. The workman no longer needs to concern himself about drawing on metal or planning his drill holes or shapes. He fabricates rapidly and without any fear of error on the drawing as shown on the metal.

Only one objection has been raised in connection with this new process of metal fabrication. This objection comes from the templet building department—the complaint is that an average draftsman cannot accurately draw a templet requiring precision within 0.001 in. However, the fact has been demonstrated that a skillful draftsman can draw as accurately with a sharp lead pencil on a smooth surface as a templet maker can scratch with a sharp point on a metal surface.

One of the large airplane companies has published the fact that the use of photography on metal has led to many savings, including the saving of \$80,000 on the drafting of one model.

The Metal Photo-Drafting Co. is installing plants that include a complete metal inhibiting and metal sensitizing department, photoprinting and developing department, and personnel to carry out the making of full scale drawings on metal.



IN the airplane industry particularly the use of sensitized metal is serving to speed production and improve accuracy

"A.W." *Quality* **PRODUCTS** *from Mine to Consumer*

Carbon, Copper or Alloy Steels—in any Open Hearth analysis, in any quantity—to meet *your* specifications . . . Welding qualities, toughness, abrasion resistance, ductility . . . There is an "A.W." Steel made to Alan Wood standards that will give you best results at the lowest possible cost.

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Foundry, Malleable and Basic.

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Standard and special sizes in any Open Hearth analysis.

BLOOMS, BILLETS AND SLABS

Alloy and Carbon Grades. Forging and Re-rolling Qualities.

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Special Alloy, Tank, Ship, Boiler, Flange, Fire Box, Locomotive Firebox, Structural and Dredge Pipe.

HOT ROLLED SHEETS

All qualities, special Alloy, Annealed, Blued Finish, Hard Red, Pickled, or Deoxidized.

FLOOR PLATES

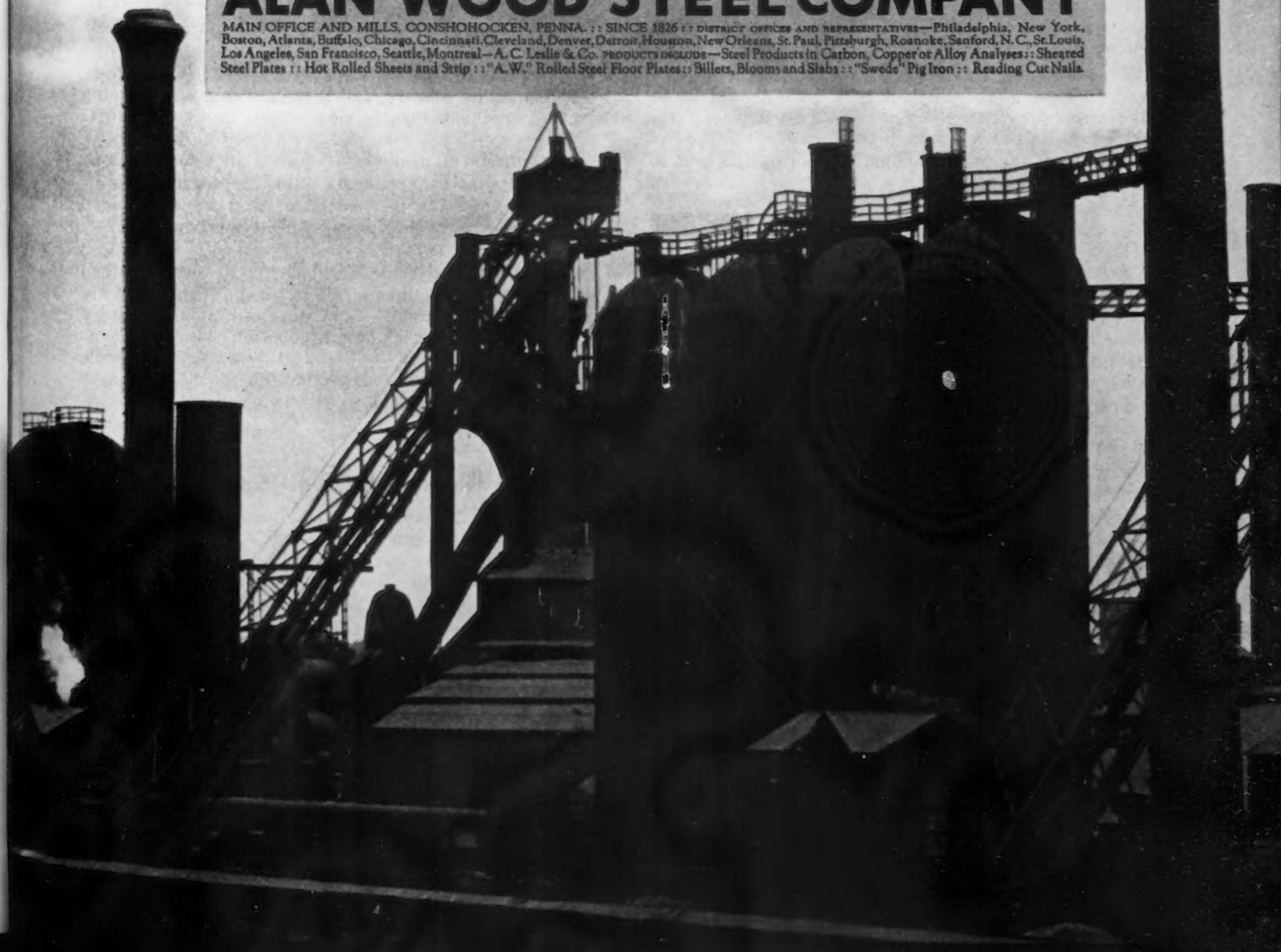
For every kind of flooring condition: "A.W." Super Diamond, Standard Diamond, Diamondette, Sunken Diamond and Ribbed Patterns. Any pattern furnished in ferrous or non-ferrous analysis.

STEEL CUT NAILS

"Reading" Brand—all types and sizes.

ALAN WOOD STEEL COMPANY

MAIN OFFICE AND MILLS, CONSHOHOCKEN, PENNA. : : SINCE 1826 : : DISTRICT OFFICES AND REPRESENTATIVES—Philadelphia, New York, Boston, Atlanta, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, New Orleans, St. Paul, Pittsburgh, Roanoke, Sanford, N. C., St. Louis, Los Angeles, San Francisco, Seattle, Montreal—A. C. Leslie & Co. PRODUCTS INCLUDE—Steel Products in Carbon, Copper or Alloy Analyses : : Sheared Steel Plates : : Hot Rolled Sheets and Strip : : "A.W." Rolled Steel Floor Plates : : Billets, Blooms and Slabs : : "Swede" Pig Iron : : Reading Cut Nails.



DETROIT — This week the automobile fraternity is making its annual hegira to New York to await the start of the National Automobile Show Saturday at Grand Central Palace.

There is fairly good feeling in the air as the auto men await the formal kick-off to the 1941 model season. Nearly all the cars, of course, are in the showrooms today and are being sold. There has been opportunity, therefore, to do some gauging of public reaction. The response is considered fairly good.

Industrial and urban areas appear to be absorbing new cars in satisfactory measure. The picture from the rural communities is not yet so clear, but it is expected to be nearly as good as in the cities.

However, there are some factors edging into the picture which may give the sales managers pause and may bring some caution on expression of anticipations.

For one thing, a few points report that used cars are somewhat more plentiful than they should be at this time of year, when summer business normally has reduced stocks to rock bottom and left dealers in clean shape to meet the heavy volume of trading incident to the new model season.

Conscription Factor in Sales

SOME other points report that used car stocks are normal or even lighter than normal, but that overallowances are already entering the sales picture. This is a most unusual condition. The auto business has always been highly competitive in the retail field, but buying at the start of a new model season is generally the easiest of all to close, and the fact that some dealers are over-trading, whether by choice or necessity, must be regarded as disturbing. Perhaps the icing on the 1941 model cake, so to speak, is not as lush as in previous years.

Another element — conscription — enters unobtrusively in the current situation. Out of conscription appears to be growing a hesitancy among certain groups to buy, and hesitancy among finance companies to approve paper for men of draft age.

The former consideration was admittedly behind the move of one large Detroit dealership in developing what amounts to a money-back guarantee on new or used cars or accessories sold before Nov. 15 to all men drafted by Jan. 31, 1941.

Agency officials explained that the plan made it possible for purchasers to protect all their equity in any automotive purchase, even when part of it involved a used car trade-in. The significant fact about the

On The Assembly Line

BY W. F. SHERMAN
Detroit Editor

• Gala New York Show opens with accompaniment of satisfactory sales reports, but cautioning factors are at hand . . . Production to set all-time October record . . . Military business clogs truck factories

entire program was that volume of business picked up quite noticeably immediately after the advertising appeared, and outstate dealers moved to copy the theme. Quite evidently there is a volume of auto business hanging away from purchasing because of fears of conscription.

Beyond that, too, the finance companies are understood to be scanning credit applications from men of draft age with a doubly cautious eye. Some Detroit finance companies were said this week to be asking automobile loan applicants within draft age to produce co-signers for their notes.

Needless to say, this is a sales factor. It should be considered, too, that much of the purchasing of young single men—those in the first conscription class—is done in the

used car lots. Any throttle on used car sales slows down new car business as well, as has been endlessly proved.

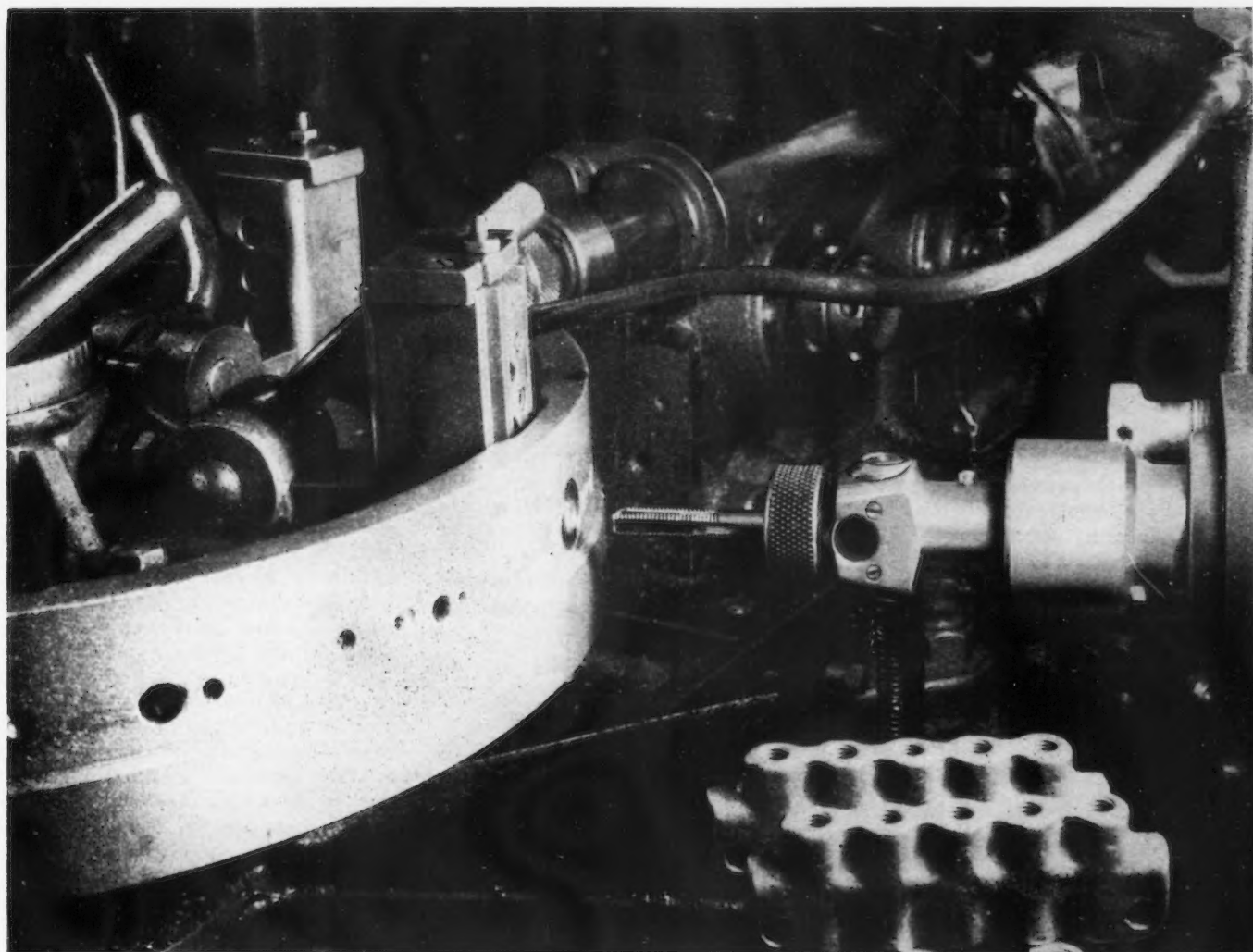
Those are the unfavorable factors in the 1941 model merchandising picture, and there are counterbalancing factors on the favorable side. Such lie in the merits of the new cars themselves, the increasing employment, the hundreds of millions of dollars in defense funds being sent like a hypodermic into the bloodstreams of commerce, and the general belief that we are headed into an expanding business year—a psychological factor of major importance.

Therein lie the reasons for being of the optimism of the sales departments. The good feeling is aptly mirrored in continually expanding output and factory shipments. Last week saw production volume go over the 100,000-mark for the first time since April. Ward's Reports, Inc., estimated production at 105,153 cars and trucks, compared with 95,990 last week and with 76,095 in this week last year. The current total is the best since January.

Record Fourth Quarter Expected

SCHEDULES ahead may see some slight enlargement, and it would be reasonable to expect an output advance to the highest levels of 1940 before the end of this month. Certainly October will start off what is expected to be a bumper fourth quarter. Many commentators expect that volume in the three months now commencing will be the highest for the final quarter of the year ever recorded—definitely above the record total of 1,162,348 units established last year.

October is earmarked to set an all-time high total for that month at 450,000 vehicles or better. By way of comparison, the best previous October came in 1937, when production aggregated 329,876 cars.

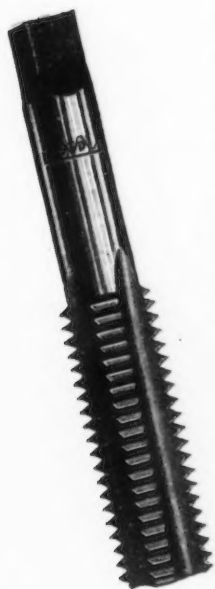


"GTD Greenfield" Taps Chosen for this hard job

Here's a ten-way double junction casting turned out by a big specialty manufacturer — 10 tapped holes in each cast-iron piece. To handle it economically calls for a real investment in tapping machinery and fixtures *plus good taps*. The company saves itself money by using "GTD Greenfield" 5/16-24 Ground Thread High Speed Steel Bottoming Taps — to

the tune of 240 completed tapped holes per hour.

Don't make the mistake of figuring tap "savings" on the cost of the taps. Figure on cost per tapped hole. "Greenfield" can help you get your costs down on this basis — and will be glad to work out test runs on your own work to prove it.



GREENFIELD TAP & DIE CORPORATION, Greenfield, Mass.

Detroit Plant: 2102 West Fort St. Warehouses in New York, Chicago, Los Angeles and San Francisco. In Canada: Greenfield Tap & Die Corp. of Canada, Ltd., Galt, Ont.



TAPS . DIES . GAGES . TWIST DRILLS . REAMERS . SCREW PLATES . PIPE TOOLS

Naturally this condition is not indicative of all-time record business. It stems from the earlier start characterizing the industry this model year, and from the uniform production movement of all manufacturers. The volume producers—Chevrolet, Ford and Plymouth—all were operating at near-capacity levels at the start of the month, and in previous years one or another of them has been behind in the output parade at this period.

1941 Wheelbase Shorter

Study of the 1941 model specifications in the over-all development some interesting conclusions. The average wheelbase of the 1941 automobile, classifying each series of each maker as one type, is 120

perhaps is the most significant development of the power plants themselves this year. It betokens improvement of gasolines, for advances in compression ratio and octane ratings must move side by side. It is the chief factor in the higher power output about which most makers are talking this year.

No War Products Exhibited

THERE will be no displays of implements of war at this week end's Automobile Show, but such production, nevertheless, is responsible for an inpouring of raw materials to the plants of already noteworthy proportions, an inpouring which will reach flood tide about next summer.

An apt example in this respect is White Motor Co., recipient late

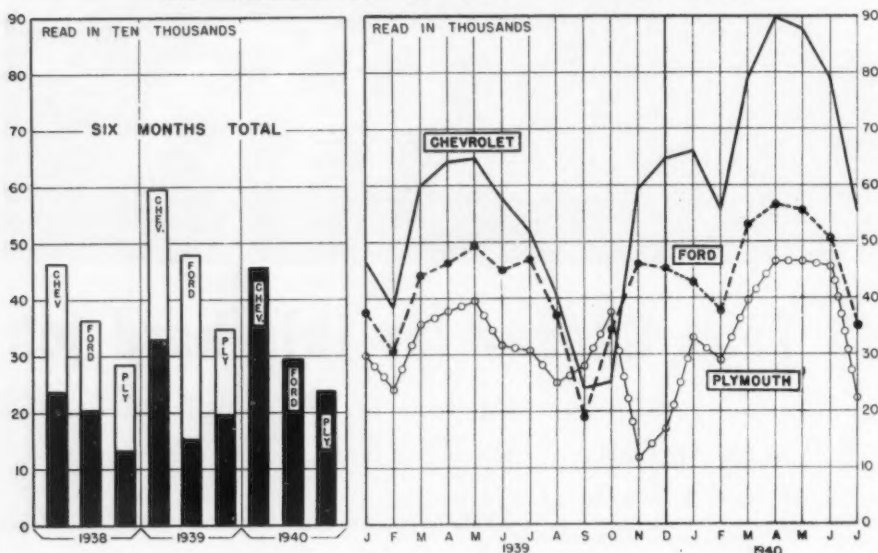
cent ordering has been commitments for half-track vehicles, which use a conventional pair of front wheels and endless tracks at the rear, affording greater mobility and immeasurably better traction. Vehicle track orders themselves have been assigned in recent months to Goodrich Tire and Rubber Co.

25% is Defense Business

In all, truck orders distributed to 13 firms during the third quarter were estimated at \$150,000,000. Another source, meanwhile, came up with a computation that defense business booked by the automobile companies, accessory and parts makers excluded, amounts thus far to about 25 per cent of a total year's gross business. When the gross incomes of General Motors, Chrysler and Ford are remembered, this 25 per cent calculation becomes of staggering size. The talk in Detroit is that forthcoming arms business may make puny the contracts already awarded; and the gravitation of such business to this city makes it appear more than likely that employment in the factories and business for raw material and supply firms will reach all-time heights during 1941.

COMPARATIVE SALES ----- THREE LEADERS

NEW PASSENGER CAR REGISTRATIONS BY MONTHS 1939-40



inches this year; last year it was 123 inches on the same basis. Actually, however, the industry has increased the length of its cars. Eliminations of several longer models from 1941 production has been the prime factor in the apparently unfavorable comparison.

The same consideration of eliminated larger models has reduced average horsepower one unit, from 113 to 112. Here again, however, the trend toward increasing power is unmistakable—up in nearly all models which can present direct comparison from one year to the next, down in none.

More positive is the increase in compression ratio this year, from 6.4 to 6.6 to 1, on an average. This

in September of an approximate \$34,000,000 order for half-track trucks and scout cars. Competent estimate in Detroit is that this will provide 5000 units, plus an equal number of power plants for other installations. This is considerably more unit volume than White produced in all of 1939, and it was preceded by about \$17,000,000 in other military business.

Yellow Truck and Coach, too, has around \$30,000,000 in defense business on its books accrued during the third quarter. Diamond T has \$20,000,000; Fargo (Dodge) \$17,750,000; Autocar \$16,800,000; and Chevrolet, \$12,800,000.

All these figures are for trucks alone. More prominent in the re-

SAE to Hear Address By Robert Patterson

• • • Robert Porter Patterson, assistant secretary of war, will discuss "The Automotive Industry and National Defense" as principal speaker at the annual dinner of the Society of Automotive Engineers, Hotel Commodore, New York, Oct. 14, one of the outstanding events of National Automobile Show Week.

Judge Patterson will be introduced by K. T. Keller, president of the Chrysler Corp. SAE President Arthur Nutt, vice president of engineering, Wright Aeronautical Corp., will conduct a brief business meeting, during which nominees for 1941 offices of the society will be announced, according to John A. C. Warner, SAE general manager.

SAE nominees for 1941 include for president, A. T. Colwell, vice president of Thompson Products Co.; for treasurer, David Beecroft, Bendix Products Division, Bendix Aviation Corp.

Wanted: Tough broaching jobs

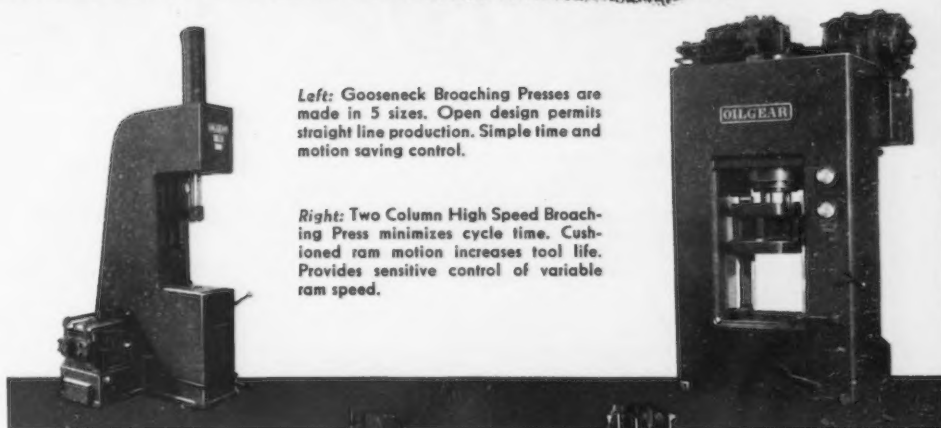
● Every year Oilgear broaching machines are adding more and more speed to production lines . . . and cutting production costs. Every year Oilgear broaching machines are solving new tough production problems. They are the product of unmatched hydraulic experience and continuing research, and they possess an enviable reputation where broaching methods are vital. They have played an important part in the development of modern broaching advances and in eliminating many seemingly permanent "bottle-necks" in modern production lines.

And now, the re-designed Oilgear Broaching Machines are licking tougher production problems than ever . . . are knocking costs per operation down to an unprecedented low.

Every Oilgear Broaching Machine has been definitely improved so that it is unusually convenient to operate; it reduces the operator's work and effort; it gives faster broaching and return speeds which are independently variable; it provides new tool and work capacities and new high standards of precision broaching.

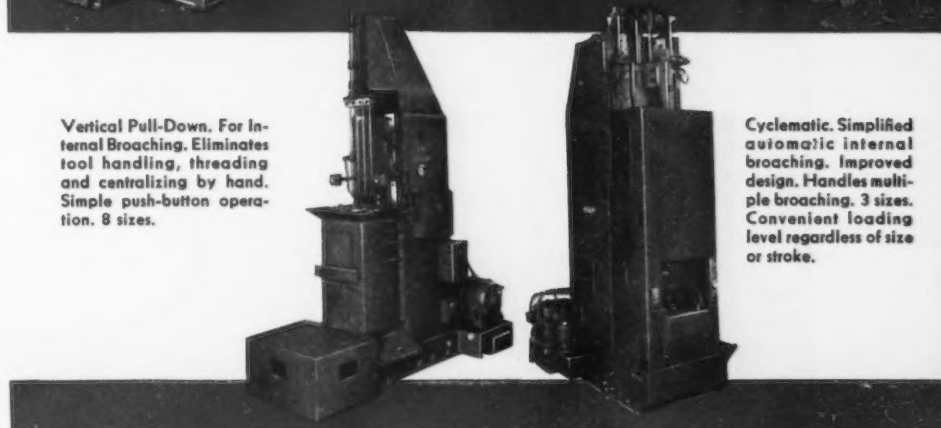
Regardless of the broaching operation, you can do it faster, more profitably and economically with Oilgear. We suggest you send at once for the new Oilgear Bulletins describing these improved machines in detail.

Use the handy coupon below. Send for any or all of these bulletins at once. Don't delay. They mean sizeable profits for you. THE OILGEAR COMPANY, 1324 W. Bruce Street, Milwaukee, Wisconsin.



Left: Gooseneck Broaching Presses are made in 5 sizes. Open design permits straight line production. Simple time and motion saving control.

Right: Two Column High Speed Broaching Press minimizes cycle time. Cushioned ram motion increases tool life. Provides sensitive control of variable ram speed.



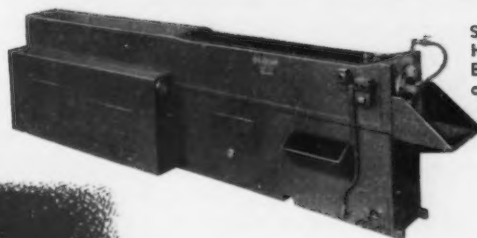
Vertical Pull-Down. For Internal Broaching. Eliminates tool handling, threading and centralizing by hand. Simple push-button operation. 8 sizes.

Cyclematic. Simplified automatic internal broaching. Improved design. Handles multiple broaching. 3 sizes. Convenient loading level regardless of size or stroke.



Left: Single Slide Vertical. 11 Sizes. Surface Broaching. Manual, semi-automatic and full automatic control. Shuttle table makes loading and unloading easier. Work clamped and unclamped automatically. Harmonic table motion permits high speed without shock.

Right: Double Slide Vertical. 11 Sizes. Surface Broaching. Sequent operations on one or more parts on same machine. Speed of each slide independently varied to suit job. Control and shuttle table features same as Single Slide Broach.



Single and Double Ram Horizontals. High speed, Internal and External Broaching; accurate, extra-convenient control and operation.

OILGEAR
fluid power
BROACHING MACHINES

FLUID POWER

Feeds • Pumps • Cylinders
Valves • Motors • Transmissions



Trademark Reg.
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Horizontal and Vertical Broaching Machines • Horizontal and Vertical Presses • Custom Built Machines

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Please send descriptive bulletin of the following new Oilgear Broaching Machines. (Check which.)

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| <input type="checkbox"/> XL & XB Horizontal Types | <input type="checkbox"/> PG Broaching Presses |
| <input type="checkbox"/> XD & XS Vertical Surface Types | <input type="checkbox"/> XP Vertical Pull-down |
| | <input type="checkbox"/> XM Vertical Cyclematic |

Name Title

Company

Street

City State

WASHINGTON—From New Deal circles persistent claims are fed to the country that because of the national defense program there are serious threats of shortages in different production lines. Just at present there is considerable harping on the prospect of insufficient steel capacity.

Though arising from a common source—that is, within the New Deal—informed sources which maintain that they are unsound generally attribute the contentions to three causes: (1) Disguised propaganda to establish a TVA in steel, meaning government ownership and operation; (2) spending and more spending to stimulate “prosperity,” and (3) sincere but misguided desk theorists, whose “broad horizon” views the nation’s whole economy, civilian as well as military, from Olympian heights.

Outside of this group of steel-shortage doctrinaires there are political pressure cliques that, regardless of economic or strategic justification, are attempting to get the government to build steel or any other kind of plants in their particular sections of the country. In fairness it may be conceded that there are also organizations of citizens who are asking, in good faith, that national defense plants be built in the sections they come from, though studies on industrial mobilization show that these requests also are entirely unsound.

Threats of Government Ownership

THERE is nothing new in threats of a government controlled or owned steel industry. Some threats, rather than serious moves, have been in the nature of clubs, recklessly swung around by such a political aggregation as the Federal Trade Commission.

This political aggregation which has made the steel industry the brunt of attacks for almost two decades made an ancient charge before the TNEC last March that the steel industry is a monopoly, and more or less ominously added that “if monopoly is to be permitted in such industries the commission can see no escape from the necessity of removing them from the privileges of free capitalist management and placing them under government control.” Then there is the group such as that represented by the Ickes crowd, who long have been blatantly advocating government ownership of any or everything either out of pique as a slap at private industry or to find an outlet for a great surplus of electric juice at Bonneville and Coulee.

The Ickes idea of a steel industry rushing to the Pacific Coast in order to get the benefit of this govern-



• Establishment of TVA in steel seen as one goal of New Deal propagandists . . . Claims that shortages of production will hamper defense likewise get circulation . . . Ickes backs Columbia Power Administration

ment electric power has not worked out. Just now there is a stimulated drive in the name of national defense for the use of this government electric power. It is being exploited to establish plants in the Pacific Northwest. Whatever the merits, it definitely is the opinion in the steel trade in the East that there is no need for additional capacity in that section to meet defense requirements.

Only last week Ickes, in an exhaustive statement, warmly endorsed bills by Senator Bone and Representative Leary of Washington to establish the Columbia Power Administration to transit and market electric power generated at Bonneville and Coulee. Mr. Ickes said also that “the objectives of the bill, which had been discussed by the President,

had received his approval.” The proposed legislation, Mr. Ickes said, will enable the Columbia Power Administration to cooperate with public and private agencies in planning the development of many minerals which the Army and Navy consider critical and strategic “and will assure a tremendous supply of the inexpensive electricity which is essential to electrochemical and electrometallurgical industries.” The point has been raised that the New Deal, if continued in power, instead of urging sensible use of the power, will not hesitate to build government-owned and operated plants if it finds it cannot induce private industries to join in the Bonneville-Coulee program as fully as they hope.

Wants Industry Socialized

THE New Deal group that would build government steel or any other kind of plants for the purpose of spending is distinctly to the far left and favors not only socialization of industry but affect the belief that “capitalism” has collapsed, that further development of the nation’s economy has come to a dead end, and that “prosperity” can be achieved only by spending without limit, without regard to the enormous federal debt already accumulated and without regard to inflation or bankruptcy.

Then there are the desk thinkers who embrace the nation’s “whole economy” and have pity mixed with scorn for the “shortsightedness” of those who do not share their view. Alarm is being sounded by the national-economy thinkers that unless there is expansion of producing capacity uncontrolled inflation is bound to cast its dark shadow over the country. Their theory is that the national defense program will put between 5,000,000 and 6,000,000 people at work, purchasing power will greatly increase and consumer demand will

SMOOTH, ROUND HOLES *with* **SPEED AND ACCURACY**

PERFORMANCE DATA

OPERATION—Drilling a 3 1/2" hole in the solid.

MACHINE—"AMERICAN"
5' 15" Column Hole Wizard
Radial Drill.

MATERIAL—1020 Cast Steel.

SPINDLE SPEED—83 R.P.M.

FEED—.018 inch per revolution.

CUTTING SPEED—78 F.P.M.

CUTTING LUBRICANT—1 part
Sunoco to 20 parts water.

Courtesy of
THE AMERICAN TOOL WORKS CO.

SUNOCO does it!

... on a production basis

Production held up ... costly time lost in frequent changing and re-sharpening of drills—may be caused when the cutting lubricant fails to meet its promised performance.

That's why leaders of the machine tool industry choose, use and recommend SUNOCO Emulsifying Cutting Oil for their machines. They know its high heat absorbing and lubricating qualities aid drills in cutting *true cylindrical holes*—with speed and accuracy. They know, too, that with SUNOCO—drills clear easily and do not clog, bind, chatter or burn.

Keep one step ahead of today's increased production demands with the correct cutting lubricant — use SUNOCO. Test it in your own plants ... under your own operating conditions. We'll rest our case on the results.

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PETROLEUM PRODUCTS FOR ALL INDUSTRIES

rise in the face of a reduced supply of consumer goods because industries normally producing such goods will be diverted to defense orders.

A Shortage Next Summer

Steel has been cited as an example. There will be a shortage of pressed steel products, so it is argued, next summer unless ingot capacity is expanded. These additional employees with increased purchasing power will want automobiles, refrigerators, and many other products made of pressed or stamped steel, it is urged, but they won't be able to get them, or if they get a part of them, they will have to pay higher prices. There will be inflation, it is contended.

All of which the steel manufacturers say is nonsense. It is conceivable there may be temporary bottlenecks in certain branches of steel due to a heavy jam of orders but that will pass without causing any serious delay in the national defense program.

President Edward L. Ryerson of the Inland Steel Co. expressed the prevailing conviction of the steel industry when he recently told the

Association of Iron and Steel Engineers that he saw no reason "at the moment, for assuming that the demands (upon the steel industry) will be greatly in excess of our capacity to produce during the next year or two." He called it evidence of "hysteria" about the war and rearmament demands upon the industry. Many think it is more than hysteria. Part of it, they are convinced, is propaganda for government ownership of a steel industry.

Mr. Ryerson also sees no danger of inflation so far as steel is concerned. He expressed the conviction that "unless conditions change radically there should be no great change in the costs and prices of steel products." The view of Mr. Ryerson and other steel executives evidently is the prevailing view among members of the National Defense Advisory Commission.



• • • Officials of the National Defense Advisory Commission who are concerned with building up an adequate labor supply of skilled workers for the defense program have adopted an "up-grading plan"

after observing methods used by leading tool making and other establishments.

Expected to make employee advancement more rapid than ever before, the new plan, according to its sponsors, will permit top notch mechanics, who devote 25 per cent of their time to the most skilled part of their work and 75 per cent to its less precise and exacting phases, to give their attention exclusively to the more skilled phases of their job.

The program is also expected to teach new employees not only a single basic operation, but also its relationship to the completed picture, with the expectation that they will be better prepared to move along to the next higher job. The idea will be carried out throughout defense industries by district representatives who will supervise the undertaking in 20 industrial centers.

Approval of the plan was announced after conferences with Sidney Hillman, head of the defense commission's labor division, and members of the training-within-industry advisory committee, who included:

W. G. Marshall, vice president, Westinghouse Electric & Mfg. Co., Pittsburgh; E. J. Robeson, personnel director, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.; K. F. Ode, personnel manager, Falk Corp., Milwaukee; and R. Randall Irwin, industrial relations manager, Lockheed Aircraft Corp., Burbank, Cal.; and M. F. Burke, Pratt & Whitney Aircraft Co., Hartford.



• • • Brazilian production of pig iron in 1940 will total 200,000 gross tons valued at approximately \$3,500,000, according to the Agricultural Information Service of the Ministry of Agriculture, says a report of the Department of Commerce from the American Embassy, Rio de Janeiro. The estimate is based on increases shown during the first seven months of 1940 as compared with the same period of 1939. During the period January-July, 1940, pig iron production totaled 104,278 tons valued at about \$1,940,550, as compared with 91,448 tons valued at about \$1,703,850 in 1939.

THE BULL OF THE WOODS

BY J. R. WILLIAMS

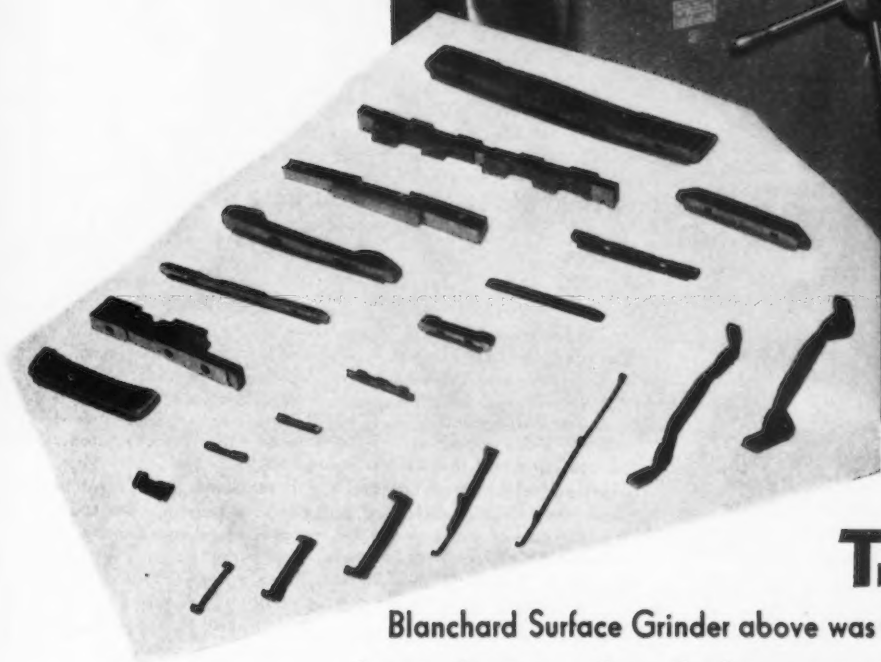


Variety

WITH CONSISTENT PROFITS



This group of parts is ground to limits of $+.0000''$ and $-.0005''$ on a Blanchard No. 11 Surface Grinder.



Send for your copy of the No. 11 Blanchard Catalog.

THE photograph of the No. 11 Blanchard Surface Grinder above was taken in the plant of a leading hone manufacturer — here the lots are small, yet tolerances of $+.0000''$ and $-.0005''$ are held with ease. Parts range from 3 inches to 8 inches in length; $.015''$ to $.020''$ of stock is ground off each surface; materials are Mild Steel, Vulcan Tool Steel, and Machine Steel. This is a typical installation where the new No. 11 Blanchard Grinder is earning profits on parts which vary in quantity, length, thickness, and material — parts on which profits are lost with a machine of less modern design than the Blanchard.

Your own surface grinding jobs will be analyzed by Blanchard engineers without obligation — just send them complete information.



THE BLANCHARD MACHINE COMPANY
64 STATE STREET, CAMBRIDGE, MASSACHUSETTS, U. S. A.

Fatigue Cracks

BY A.H.DIX

Another Deathless Line

• • • We are one to whom the process of rhyming is as painful and slow as removing putty from an old window frame. Therefore, we are very proud of the couplet offered last week as a slogan for next year. As you probably don't recall, it ran:

*Your order book assuredly will be
As fat as Galento in '41 A.D.*

The lack of complaints about this has encouraged our muse to the extent of cooking up this one as a slogan for the current year:

*You can order the best on the table de hote,
With the money you make in the year nineteen fo'ty.*

Midwestern Milton

• • • We envy those gifted souls who can give birth to more or less balanced lines with as few labor pains as are endured by the common housefly, and who will exercise their gift at the drop of a pentameter. As an instance we quote the following received from an anonymous Keats in Kokomo, Ind., and sent to us in one of the c.o.d. reply envelopes we disseminate generously in the hope that they will bring checks and orders back to us:

*Thank you for the postage paid,
This much appreciated aid.
For this device indeed insures
That what is mine and what is yours
Does not ever get confused.
Though I'll admit you're not amused
To see your postage money spent
Not knowing just to whom it's lent.*

Far Eastern Shelley

• • • The Japanese, as a race, are far more poetic than we are, and even display their art in ordinary business correspondence. Here, for example, is a letter from a Nipponese manufacturer, acknowledging our invitation to return to our big and more or less happy family:

Thank you for your kind letter. We must come back to your family. But now, I am sorry, without the admittance of the Finance Department, we cannot remit.

*No pay means no reward
Full well I know.*

Please wait for a time till the circumstances favour us. We want your copies very much. Would you please treat us kindly as usual?

Tight Little Isle's Homer

• • • While we are at it, we might as well throw in, begging the pardon of W. W. Rose, executive v.p. of the Gray Iron Founders' Society, the following, quoted from memory from the *English Foundry Trade Journal*:

*Little drops of cement,
Little spots of paint,
Often make a casting
Look like what it ain't.*

Doubting Thomas and D. T's.

• • • A few weeks ago we quoted this from an IRON AGE field man's report:

"Cancel this sub. The gentleman has been on a 30-day drunk and has been fired."

"What a man!" a reader writes admiringly, but adds, "However, I don't believe it." S'elp us, it's true, and we can get an affidavit from a certain high-priced dehydrating institution to prove it.

Your favorite family journal, with the world's greatest volume of advertising, the largest number of editorial

pages, serving the most important single division of the industrial market, and having the top number of readers in that market, is in the habit of seeing its loving friends do things in a big way.

Blurb

• • • While we are bragging, we might mention that this issue is, with the exception of Annual Numbers, the biggest since Napoleon was a lance corporal.

Insect Expectancy Increaser

• • • When we were out riding last week with Sam DeWolf, one of our field men, we had to stop every hour or so to clean squashed insects from the windshield. Sam said casually, "I ought to get a debugger." "What's that?" we asked. A debugger, he explained, is a small wind scoop you fasten to the radiator ornament. It creates an air flow that carries the insects over the top of the car.

Up to now we have been proud of the fact that every automobile manufacturer and practically every representative parts maker are members of the big, growing family, but we confess with shame that our coverage of the debugger industry is less than the virgin wool content of a \$12 topcoat.

Filet Mignon From Hamburger

• • • Rarely are we happier than when greasing the wheels of industry by helping a reader solve a not too vexing problem. But occasionally we are stopped in our tracks. A gentleman in Manila, P. I., asks us to send him complete specifications and approximate cost of a 10-ton-per-day unit into which he may feed scrap and make nails, nuts and bolts and tin plate. We're working on a drawing, with the assistance of Rube Goldberg.

Squawk

• • • The word *serendipity*, aired here recently, evokes this from Ernest C. (Clark Controller Co.) Roberts:

The word *serendipity* smote me in the region of the umbilicus, and during the entire weekend it haunted me but craftily evaded any possibility of being used in conversation.

Even with systoles of thought and diastoles of words, plus a concentrated attack of maschalephidrosis, the intriguing word cleverly sidestepped actual use in even the most oxymoronic phrases, and was thus useless in logomachy.

Instead of wowing friends with it, it threw me for a loss, and more than slightly disturbed an otherwise peaceful weekend. It's just one of those words for no good, and you'd have to chloroform your hearers to make 'em hearken.

He signs himself, "*The antithesis of serendipitous*," which sets us to wondering whether the word has an antonym. If there is it would be useful to describe how you feel when looking through an old pair of pants for a pipe you mislaid and finding an unpaid gas bill.

Puzzles

• • • N.B. (Wm. B. Remington, Inc.) Winkless, Jr., proves by arithmetic that a wind blowing parallel to an airplane's course on a round trip slows up the flying time. He explains:

Ground distance from A to B is 100 miles. Plane's speed is 100 m.p.h. A 20 m.p.h. wind is blowing parallel to the course. With a tail wind on the out trip the plane flies 120 m.p.h. and arrives in 50 min. With a head wind on the way back the plane flies 80 m.p.h. and takes 1 hr. 15 min., a total of 2 hr. 5 min.

H. M. Oshry agrees with Mr. Winkless and the arithmetic book, making it unanimous. Even with the figures we couldn't see it, until it came to us in an Archimedean flash that the reason it works out that way is because the wind hinders for a longer time than it helps.

Don F. (Vulcan Crucible Steel Co.) Morse thinks you ought to get an A plus in math if you can figure out the discrepancy in this in five minutes:

A man deposits \$50 in the bank on Monday. On Tuesday he withdraws \$20, leaving \$30. On Wednesday he withdraws \$15, leaving \$15. On Thursday he withdraws \$9, leaving \$6. On Friday he withdraws the \$6, leaving nothing.

Why do the withdrawals add up to \$50 and the remainders to \$51?



*"Expansion
Time"*

Lathes By
Monarch
Will Do
Tomorrow's
Competitive
Job

WHY RESEARCH AT A TIME LIKE THIS?

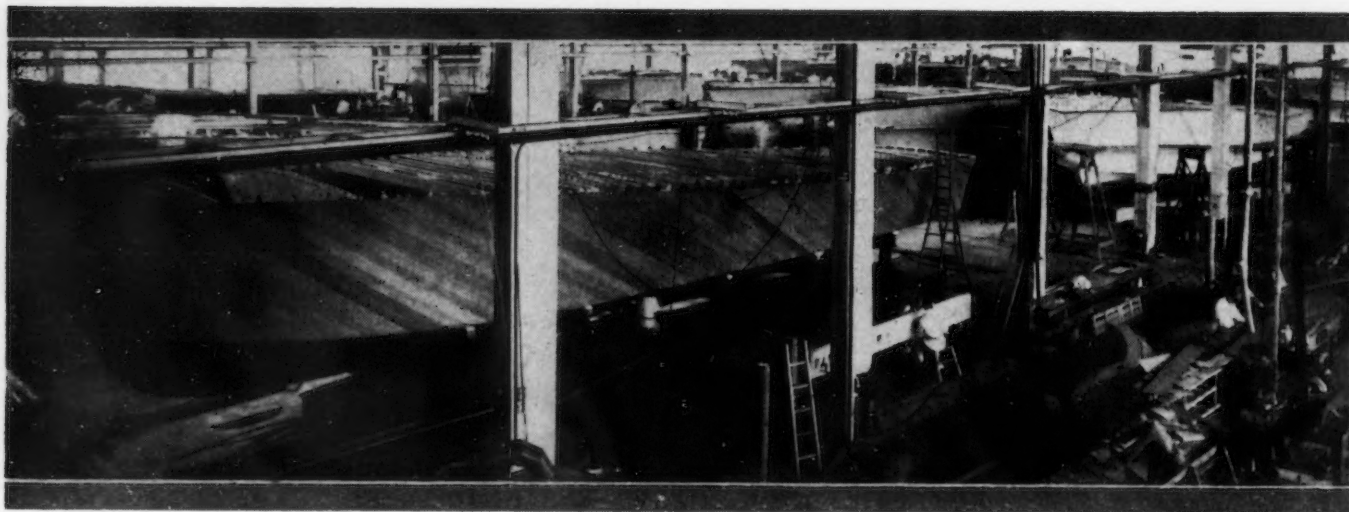
THE time for preparedness is BEFORE the emergency arises . . . not AFTER. That's why, for many years, MONARCH has maintained a policy of constant, unrelenting research. From the crucible of MONARCH research have come many of the greatest improvements in modern lathe manufacture . . . notably, the exclusive "Flame Hardening" process.

This development hardens the bed way surfaces of lathes after planing, by subjecting them to intense heat from oxygen-acetylene burner tips in a special "Flame Hardening" water tank. The depth of the hardened portion is a minimum of $\frac{1}{8}$ " and can be made $\frac{1}{4}$ " or more. The grain structure of the entire hardened portion is greatly refined and condensed, while the dense, close-grained metal directly under the hardened portions, gives a rigid support. The "Flame-Hardening" process insures against bed wear, scoring, inaccuracy and shortened life . . . helps industry advance a step farther toward its ultimate goal of producing "More Goods For More People, At Lower Cost." The Monarch Machine Tool Company, Sidney, Ohio.

MONARCH LATHES

Tool-up with Monarch!

News of Industry...



Democracy Best Block Declares

Chicago

••• Advantages of a democracy, as compared with other forms of government, were outlined last week by Joseph L. Block, executive vice president of Inland Steel Co., before the Catholic Youth Congress at Chicago.

"All the strength and wealth of our country, all our vast natural resources, our great centers of industry and commerce, our fine products of field and factory have been developed because no clique of self-appointed men has been able to impose its will permanently upon the people." Mr. Block declared, "We have gone farther, and progressed faster, than any other nation. We have prospered because the people have been able to express their will through their government.

"I would not give you the impression that I believe that any and every new venture will end with the results I have just cited (Germany and Italy) or that Utopia will just naturally follow from an unrestrained and unregulated economy. I have no such delusions. Nor do I hold that all regulatory activities are in themselves harmful.

"I do contend," said the Inland official, "that the experience of

70-FT. SUB-CHASERS and motor torpedo boats are rolling through a regular production line at the Elco Naval Works in Bayonne, N. J., which Austin Co., Cleveland, designed and built complete in 75 days.

other countries indicates that this business of regulating has a habit of acting like a festered sore which spreads and infects the whole body. A great American once said that this nation could not exist 'half slave and half free'—it would seem equally true that the business of this nation could not exist 'half slave and half free'."

G-E Draftees to Get Month's Pay, Leave of Absence

••• General Electric Co. employees who are called for military service or those who voluntarily enlist for the 12 months' training period will receive a full month's pay and be granted a year's leave of absence, Charles E. Wilson, president, announces. Only employees with one year or more of continuous employment with the company will be eligible to receive this adjustment. Provision has also been made for continuance, during an employee's military service, of various benefits such as additional group life insurance, additional pension, etc.

Bomb Locaters In British Plants

London

••• In spite of the widespread bombing of London and other British industrial centers, steel production is being well maintained. With the expert "bomber locaters" on the roofs, the mills continue at work until the actual moment of danger arrives. The industry is not, of course, immune from air raids, but output would be seriously affected if the men stopped work throughout the whole of the raid warning periods. Only when danger actually threatens overhead is a halt now called. Steel mill directors pay a high tribute to the courage and patriotism of the men who continue at work under these hazardous conditions.

Exceptionally large quantities of scrap and finished steel products continue to pour in from the United States to make up for any loss of domestic output. Indeed, imports of scrap are now so large that the Iron and Steel Control has been able to build up substantial stocks. Nor will the expected embargo on U. S. scrap exports hinder the British mills, since enormous dumps of domestic scrap—the result of the national salvage campaign—are now scattered all over the country.

Rearming to Tax Railways of U. S.

Washington

••• Pointing to rapidly expanding requirements of the national defense program, particularly for construction materials, W. C. Kendall, chairman of the Car Service Division, Association of American Railroads, has addressed a letter to members of the Shippers Advisory Boards of the association calling upon shippers and receivers of freight to cooperate "to the end that maximum utilization of the available car supply may be obtained." His letter was prompted, Mr. Kendall said, by the "gratifying" response to a similar communication of last year when in October the "new high record" of miles per day was achieved, and the 1939 average load of carload freight was 36.8 tons, the best ever attained.

Simultaneously Mr. Kendall sent to all railroads a circular directing attention to the shipper letter, stating that "if car requirements this fall are to be satisfactorily met, roads must 'brush out the corners' in every possible way to prevent lost car days and increase car efficiency."

Much of the greatly stimulated national defense requirements, Mr. Kendall said in the letter, is long-haul traffic, which added to a substantial increase in trans-continental traffic due to a reduction in intercoastal vessel operation requires greater service from the car supply than indicated by a comparison of the volume loaded. It was explained that steel production is at capacity and that export freight, "which causes more than average car detention even when handled currently, is running in volume close to records established in the last war."

Renewing a recommendation made in the letter of last year, Mr. Kendall suggested that shippers relax somewhat the more technical requirements regarding car condition, and cooperate to the fullest possible measure by utilizing without rejection cars furnished if they have been approved by the railroad mechanical inspector for the commodity to be loaded.

Other suggestions made were: Aid in the observance of car ser-

vice rules that cars may be forwarded promptly to the owners in order to maintain a well-balanced car supply; order cars as much in advance as possible, specifying type, size, destination, routing and commodity to be loaded; refrain from reloading cars released at plants where such loading is not in accordance with car service rules, and unless authorized by serving road; match loading and unloading performance to the extent possible with the scheduled switching service; promptly notify railroad agent of cars unloaded and ready to be moved out; load cars to capacity where orders or unloading facilities permit; consignees order full capacity loading; load and unload promptly, instead of taking advantage of the full 48 hr. free time; completely unload cars, removing all dunnage and debris, thus making cars immediately available for next

shipper; prevent damage to high-class cars, and consequent lost car days, by avoiding loading with contaminating commodities; avoid inflation in car orders.

In his circular, Mr. Kendall said that despite the net increase of 77,235 serviceable cars as of September, 1940, compared with September, 1939, railroads may expect a considerable strain upon car supply during the coming fall months.

Suggesting how railroads might "brush out the corners," Mr. Kendall called for "diligent action" to the end that: Car service rules be observed; week-end campaigns be conducted to clear roads of all foreign empties which cannot be immediately used in accordance with car service rules; industrial tracks be kept cleared of all empties except those which can be currently loaded; delivery of empty cars to short lines for return loading be limited to the number of cars which can be loaded promptly; all available serviceable cars be pressed into service by fitting class of car to loading required; commodity inspection of cars be established in accordance with A.A.R. recommended practice; good order cars shall not be used for storage of company material; undue accumulation for industries be avoided by the use of embargo and permit; all special per diem arrangements other than those approved under Rule 6, Appendix B, be reviewed to the end that any waste in car days resulting therefrom may be eliminated through cancellation of such arrangements; reports and supervision as to car handling, dropped during depression years, be reinstated to the extent necessary to accomplish the above objectives.

Coming Events

Oct. 7 to 11—Twenty-ninth National Safety Congress and Exposition, Chicago.

Oct. 13 to 16—American Gear Manufacturers Association, semi-annual meeting, Skytop, Pa.

Oct. 14—Society of Automotive Engineers, annual dinner, New York.

Oct. 16—Porcelain Enamel Institute, fifth annual forum, Urbana, Ill.

Oct. 15 to 18—American Institute of Steel Construction, annual meeting, White Sulphur Springs, W. Va.

Oct. 17 to 19—American Society of Tool Engineers, semi-annual meeting, Cincinnati.

Oct. 21 and 22—Associated Machine Tool Dealers of America, annual convention, Dayton, Ohio.

Oct. 21 to 25—National Metal Congress, Cleveland.

Oct. 25 to 26—Foundry Equipment Manufacturers Association, annual meeting, Hot Springs, Va.

Oct. 31 to Nov. 2—Society of Automotive Engineers, national aircraft production meeting and exhibition, Los Angeles.

Ammunition Loading Plant for Indiana

Chicago

••• Union Center, La Porte county, Ind., will be the site for an ammunition loading plant, the third of its kind announced by the Army recently. The other two are to be located at Ravenna, Ohio, and Wilmington, Ill. About 13,000 acres of land will be purchased for the Union Center plant, which is to be civilian constructed and civilian operated on a cost-plus fixed fee basis.

Whiting Corp. Acquires Quickwork Co., Chicago

Chicago

••• Whiting Corp., Harvey, Ill., has acquired the Quickwork Co., formerly of St. Mary's, Ohio, and Chicago. The entire Quickwork line of rotary shears, stamping trimmers and forming machines, power hammers, throatless shears and flanges will be produced by Whiting. Stevens H. Hammond, vice president of Whiting, will be in charge of Quickwork operations, with Paul V. Hyland of Whiting's industrial division appointed Quickwork sales manager. B. W. Packer, formerly with Quickwork, joins the new organization as chief engineer. S. M. Steinko will be in charge of advertising.

Aircraft Pump Plant Will Be Enlarged

Cleveland

••• Production space of Pump Engineering Service Co., maker of aircraft pumps, will be doubled as the company has purchased a five-story building which it now partially occupies. Ralph McOuat, vice-president, said the company is now employing about 330 persons.

New Tool Hardening Plant for Cleveland

Cleveland

••• A new tool hardening plant will be constructed by Ohio Forge & Machine Co. here at a cost estimated to be around \$18,000.

G-E Third Quarter Busiest in Its History

••• Orders received by General Electric Co. during the three months ended Sept. 30 amounted to \$185,156,837, compared with \$79,510,205 for the same period last year, an increase of 133 per cent, Charles E. Wilson, president, reports. This was the largest amount of new business ever received by the company in any three months' period. Slightly more than one-fourth of third quarter business was in government orders.

For the first nine months this year, orders received amounted to \$397,810,151, also a record for this period, compared with \$248,581,851 for the like period of 1939.

August Steel Exports Reach Record Total of 1,402,075 Tons

IMPORTS				EXPORTS			
August		Eight Months Ended August		August		Eight Months Ended August	
1940	1939	1940	1939	1940	1939	1940	1939
882	3,204	7,724	25,247	Pig iron	121,948	9,214	323,674
292	3,362	17,718	41,697	Ferromanganese and Spiegeleisen ¹	942	27	11,189
105	93	872	1,078	Ferrochromium and ferrosilicon ¹	*		
1	38	215	200	Other ferroalloys ¹	3,165	504	11,574
1	244	610	1,222	Sponge iron	355,991	291,896	2,164,225
16	3,729	1,428	21,867	Scrap: iron, steel, tin plate	482,046	301,641	2,510,662
1,296	10,670	28,567	91,311	Pig iron, ferroalloys and scrap	342,641	4,960	1,236,623
.....	36	440	265	Ingots, blooms, billets, sheet bars	6,390	111	29,370
.....	.....	.....	.....	Ingots, etc.: stainless, other alloys	20,443	9,039	64,876
.....	.....	.....	.....	Skelp	42,145	1,477	166,491
.....	775	3,949	6,513	Wire rods	411,619	15,587	1,497,360
.....	811	4,389	6,778	Semi-finished steel	53,408	27,153	340,341
.....	22	113	1,298	Sheets, black iron and steel ²	13,125	10,412	116,385
.....	.....	.....	.....	Sheets, galvanized iron and steel	212	408	3,811
.....	.....	.....	.....	Sheets, alloy steel	146	41	1,215
.....	.....	.....	.....	Sheets, stainless	79,883	20,736	343,274
.....	1	10	21	Plates, plain and fabricated	194	181	1,719
.....	.....	.....	.....	Plates, alloy	66	33	331
.....	.....	.....	.....	Plates, stainless	80,791	11,474	414,080
.....	43	1,795	16,353	Bars, merchant and reinforcing	732	41	10,416
.....	34	194	435	Bars, iron ³	2,718	882	18,550
.....	.....	.....	.....	Bars, alloy steel	40	15	588
.....	.....	.....	.....	Bars, stainless	*		
.....	10	854	971	Bars, hollow steel	22,688	9,758	128,567
.....	4,949	612	20,778	Hoops, bands, strips, cotton ties	559	69	1,136
.....	.....	.....	.....	Hoops, bands, strip: alloy steel	129	51	571
.....	.....	.....	.....	Hoops, bands, strip: stainless	425	1,339	8,968
.....	.....	.....	.....	Piling, sheet	74,330	8,771	205,552
.....	19	710	35,512	Structural shapes	5,035	3,096	49,174
.....	.....	.....	.....	Structural material, fabricated ⁴	20,610	27,760	318,734
.....	6	5	42	Tin plate,terne plate, taggers' tin	3,523	1,661	19,799
.....	.....	.....	.....	Tanks, steel	8,207	3,266	73,385
.....	.....	.....	.....	Pipe, welded iron and steel	10,993	6,786	124,964
.....	190	2,349	24,818	Casing and oil line pipe	2,013	808	15,622
.....	.....	.....	.....	Boiler tubes	7,476	2,940	59,347
.....	43	849	1,611	Wire, round iron and steel, telephone	1,435	243	8,357
.....	19	486	1,309	Wire rope, strand, other products	6,646	3,752	30,089
.....	.....	.....	.....	Wire, barbed, woven products	11,460	3,820	87,731
.....	396	86	13,491	Wire, flat, all other types	636	533	4,992
.....	.....	.....	.....	Nails, tacks and staples	5,033	570	15,141
.....	2	106	6,333	Bolts, nuts, rivets, washers, etc.	80,916	3,704	167,987
.....	1	128	79	Rails and track material	*		
.....	28	1,444	4,729	Die blocks or blanks, etc.	1,834	831	14,489
.....	.....	.....	.....	All other finished steel	495,263	151,134	2,585,315
.....	62	3	307	Rolled and finished steel	5,603	3,860	53,054
.....	769	11,865	136,328	Cast iron pipe and fittings	277	317	3,453
.....	.....	.....	.....	Malleable iron pipe fittings	4,819	2,100	23,686
.....	.....	.....	.....	Castings, forgings: iron and steel	312	201	3,757
.....	.....	.....	.....	Castings, forgings: alloy and stainless	2,116	2,238	11,445
.....	.....	.....	.....	Car wheels and axles	13,127	8,716	95,395
.....	35	854	1,756	Castings and forgings	1,402,075	477,078	6,688,732
.....	399	.....	.....	Total	.....	.....	2,430,914
2,105	28,328	45,695	236,273				

¹ In imports the tonnage shown is the alloy content: the manganese, chromium and silicon content, as the case may be. ² Imports include skelp and saw plate. ³ Import figure includes iron slabs. ⁴ Imports include sashes and frames only.

*No separate figures.

German Firm to Build Steel Plant for Danes

Hamburg

••• After two years of negotiations, Denmark is to have her steel plant, the "Dansk Staalverks A/S," with 7,000,000 kronen capital and 2,700,000 kronen extra participation of the government. A steel plant will be constructed near Roskilde, Seeland, with 45,000 tons annual capacity. The plant will be constructed by a German company and will start production in about 16 to 18 months. The Danish steel consumption is about 350,000 tons annually.

Yugoslavia is constructing a new ferroalloy plant at Crnica.

Sabotage Reported In Czech Steel Plants

London

••• The recognition of the Provisional Czech Government in London appears to have encouraged the stubborn resistance of the Czech people to the Nazis. This has been especially evident in steel mills, where sabotage is increasing. Recently a fitter in a Czech steel mill was sentenced to death and his accomplice given five years' imprisonment.

The company, "La Dalmatique," is investing about a million dollars in a plant for production of ferromanganese, ferrosilicon and ferromolybdenum on large scale. All the necessary raw materials are found in Yugoslavia. Chromium ore production is also rising and a ferrochromium plant is under construction at Gragujevac.

Turkey is suffering from an extraordinary shortage of steel. The consumption of steel by private consumers has been forbidden. The few factories using steel products for making secondary products have mostly closed down. At Constantinople very large quantities of chromium ores had to be stocked, as Great Britain cannot at present take delivery and Germany is taking only the 60 per cent of the Turkish output agreed upon, so production had to be curtailed.

Italy's pig iron production in the first half of 1940 was 551,000

tons as compared with 429,000 tons last year and 542,000 tons two years ago. Steel production was 1,191,000 tons, an increase of 7 per cent over 1939.

The new Swedish-Russian trade agreement provides annual deliveries from Sweden to Russia, immediate purchases on a 100 million kroner credit (about \$25,000,000) of machinery iron, steel, hardware products, etc., and regular pur-

chases worth about \$37,000,000. Russia will supply oil, cotton, manganese ores, furs, oil seeds, oil cakes, maize and wheat.

A joint export company has been established by d'Ougree-Marihay in Belgium and the Otto-Wolff Concern Cologne for export of Belgian and Luxemburgian steel products to Portugal, Spain and "overseas." The capital is 50 million marks.



IN 14 DAYS

...a complete metal building!

This aircraft manufacturer needed a new hangar—in a hurry. Officials quickly selected a 60'-by 80' metal building. Plans were drawn. In 9 days the foundation was laid. In 5 more working days the building was up!

Breath-taking speed? Yes, but it is typical of the fast, easy erection made possible by experienced manufacturers of steel buildings.

Quick construction is not the only advantage of metal structures. When insulated, the

walls and roofs keep out summer's heat and winter's cold. They assure utmost protection against fire and lightning. And best of all, metal buildings have high salvage value.

Should new warehouse or factory facilities be on your program, consider these durable, low-cost, easy-to-erect metal buildings. Write us for the names of manufacturers, and for complete information about ARMCO iron and steel sheets used in building construction. The American Rolling Mill Company, 2450 Curtis St., Middletown, Ohio.



ARMCO IRON AND STEEL SHEETS

Britain Seeks Rarer Metals in Empire

London

••• The war has resulted in a big increase in the demand for some of the rarer minerals which have a specialized use in armament production. Most of these, including manganese, chromium, tungsten, vanadium, antimony, molybdenum, and cobalt are used as alloys. Platinum and mercury, however, are much used for laboratory work. While these metals are being obtained from all available sources, the extent to which they are found in the Empire is a matter of importance to the British armament industries, and there are indications that the expanded requirements for these metals is being met to an increasing extent from Empire sources.

For example, a new deposit of manganese has recently been discovered in Manitoba. Several

Wanted: 75 Pairs of Skis for U. S. Army

Chicago

••• The Army is taking to skis. From U. S. Army Quartermaster's Department at San Francisco comes word that the Alaskan defense force at Anchorage, Alaska, is in the market for 75 pairs of hickory skis, together with the best grade and quality of Tonkin cane poles.

fresh occurrences of molybdenite have recently been developed, and the output of antimony has been greatly increased. After having been adversely affected by the fall in the price of silver, of which it was formerly a by-product, the advancing price of cobalt is now reversing the positions of the two metals, and the cobalt output is now rising sharply. Further increases are expected.

Kroenke Buys Cleveland Pressed Steel Business

Cleveland

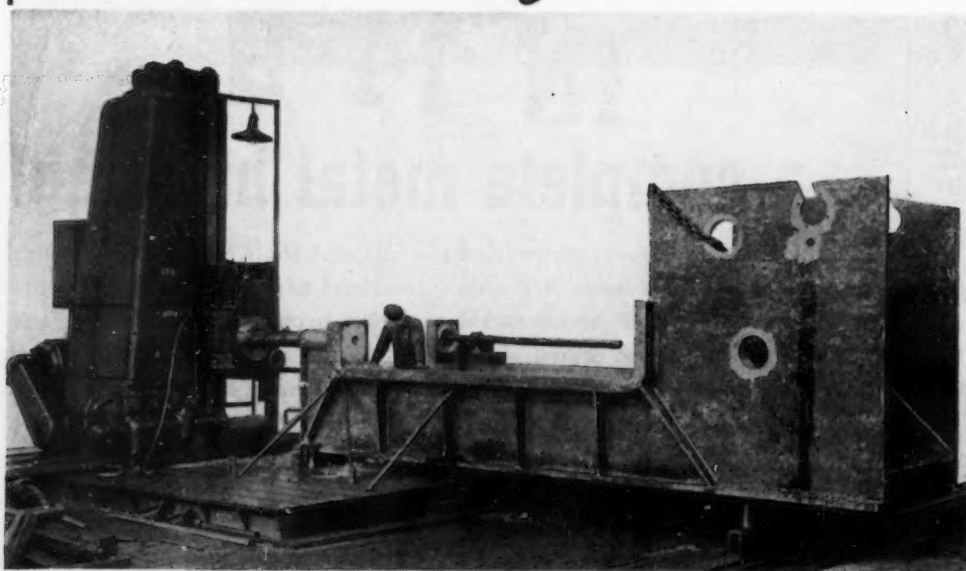
••• A. H. Kroenke, former assistant superintendent of Geometric Stamping Co., has purchased with his associates the business and equipment of the Cleveland Pressed Steel Co., 2953 East 55 Street. Mr. Kroenke will be president and Michael A. Feighan, vice-president.

Edwards Lathe Co. Formed In Cincinnati

Cincinnati

Articles of incorporation of the Edwards Lathe Co. were issued at Columbus, Ohio, recently to three Cincinnatians. Incorporators are Howard W. Edwards, Howard W. Edwards, Jr. and Haveth E. Mau. Mr. Edwards is president of the Edwards Mfg. Co., Cincinnati.

"Ohio Horizontals"



MINIMIZE handling of large work during process of production.



The Cleveland Crane & Engineering Company depend on "OHIO HORIZONTALS" for machining their large "Steelweld" Bulldozer and Press Brake frames.

Built in table and floor type with a complete range of attachments. Write for a bulletin.

THE OHIO MACHINE TOOL CO.
KENTON, OHIO

MANUFACTURERS OF

SHAPERS **OHIO DREADNAUGHT** PLANERS
HORIZONTAL BORING, DRILLING and MILLING MACHINES

LATROBE

The
BETTER
Tool Steel

18-4-1

Electrite No. 1

HIGH SPEED STEEL

HIGH SPEED STEELS for every need

ELECTRITE NO. 1
ELECTRITE NO. 19
ELECTRITE VANADIUM
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ELECTRITE COBALT
ELECTRITE SUPER COBALT
ELECTRITE ULTRA COBALT

Stocked in Principal Cities



Users of high speed steels who are contributing their part to the national defense program will find ELECTRITE NO. 1 fittingly adapted to this new tempo of production.

This 18-4-1 High Speed Steel possesses a maximum of red hardness and wear-resistance ideal for quality cutting tools. It responds readily to heat treatment, has a highly uniform grain structure and is of maximum density . . . factors which result in uniformly sound, tough steel!

*Ask for latest bulletin on Latrobe
Electrite No. 1 high-speed steel.*

Latrobe

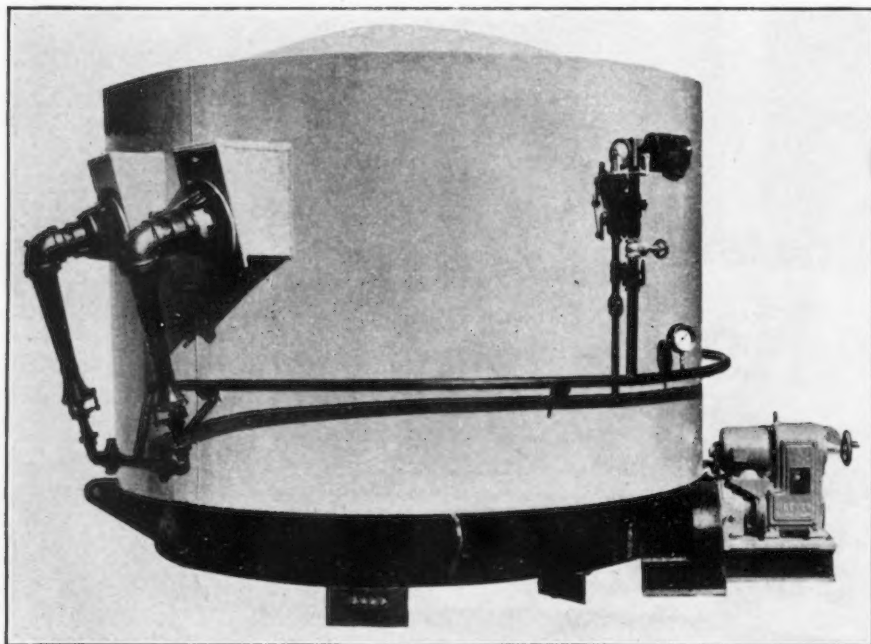
ELECTRIC STEEL COMPANY

MAIN OFFICES and PLANT .. LATROBE . PENNSYLVANIA

STATUS OF NAVAL AIRCRAFT ON SEPT. 27

The United States Navy had on hand or on order the following aircraft on Sept. 27:

	Combatant	Training	Utility	Total
Useful planes on hand.....	1234	422	156	1812
Total planes on hand (includes obsolete, experimental)	1642	428	188	2258
Total planes on order	1502	1467	32	3001



Control Machine Speeds

—and You Control Production Quality

● In scores of industrial processing operations, as with this Gas Machinery Co. Rotary Heating Furnace, the vital matter of *timing* the process is regulated by the speed of the machine. For all such purposes REEVES Speed Control provides infinitely variable, stepless regulation, easily accomplished without stopping the machine. Dozens of models and sizes, to meet all installation requirements. Over 120,000 REEVES units now in service.

Catalog G-397 may illustrate and describe the exact installation you are looking for. Write for it.

REEVES PULLEY COMPANY, Dept. 1, COLUMBUS, INDIANA

Reeves Speed Control

Visit Our Booth Y-62—National Metal Show

Willkie's 7-Point Plan for Labor

Pittsburgh

• • • Wendell L. Willkie praised the Wagner Act, criticized its administration by the present Labor Board, and asserted that labor in America must always have the right of collective bargaining during speeches here and in nearby steel towns in Ohio and Pennsylvania. Speaking at Forbes Field on Oct. 3, Willkie offered his own 7-point program for labor in the U. S. It follows:

First. Strengthening of the existing Federal Conciliation Service and integration of its work with that of the Labor Board.

Second. Decentralization of

Weirton, W. Va., Votes Against Incorporation

• • • Citizens of Weirton, W. Va., one of the largest unincorporated towns in the country, and headquarters for Weirton Steel Co., have voted against incorporation and annexation to Holidays Cove, a nearby municipality. Weirton's four precincts voted 637 for annexation and 1278 against. Of 7353 residents eligible to vote only 2976 cast ballots. Weirton's form of government has frequently been a union issue.

federal government activities in the labor field, on the grounds that each locality knows its own problems best.

Third. Encouragement of the states in strengthening their procedures for the settlement of labor disputes.

Fourth. Fair minimum wages, below which no employer can go, with the law enforced in both North and South.

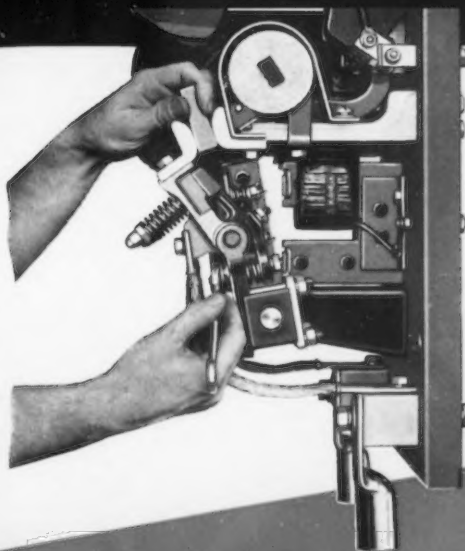
Fifth. Maximum hour legislation, with "a fair day's work for a fair day's pay."

Sixth. Extension of social security to those who do not now enjoy it.

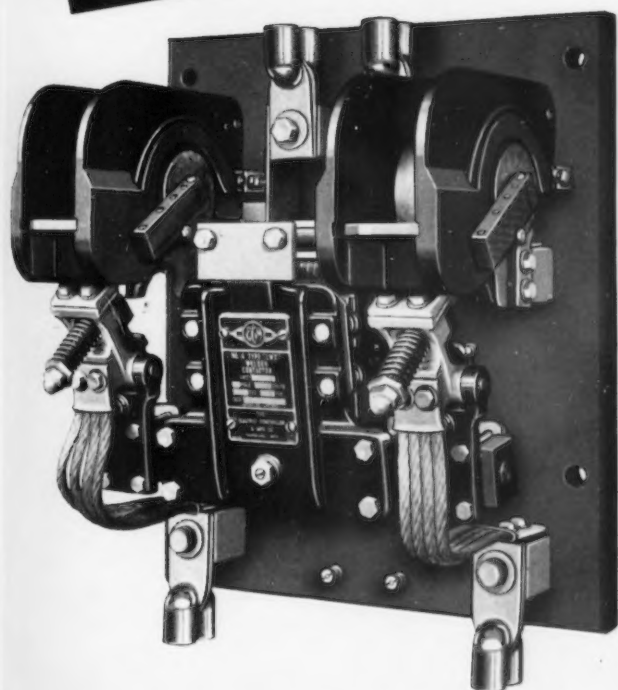
Seventh. Inclusion of labor in councils of the government, particularly in conferences with agriculture, business and consumers,

HI-SPEED WELDING

with the NEW EC&M
TYPE LWZ WELDER CONTACTORS



Convenient Contact-adjustment makes
possible Consistent Results through
high speed, uniform opening



NO. 4W OPEN TYPE LWZ CONTACTOR



ask for
Bulletin 1201 for WELD TIMERS
Bulletin 1211 for WELDER CONTACTORS

THESE ARE heavy-duty Magnetic Contactors especially designed for welding service. They are not an adaptation of a standard contactor, but are an entirely new design incorporating many features which insure GOOD WELDS at low cost. Of outstanding importance is the readily accessible contact-adjustment which permits high-speed, uniform opening, giving consistent welding results.

All contacts of these new LWZ Contactors are pure copper, cold-formed by a special process providing high Brinnell hardness throughout their thickness. Proper cushioning and design eliminates bounce in both opening and closing. Shunts are of special flexible cable of individually tinned strands of wire. Proper length and design of these shunts eliminates whip and breakage.

Continuous capacity operating coils are capable of frequent operation in welder service and are well suited for heating and similar applications where the contactor may be closed for a long period of time.

From the standpoint of arc-handling ability, these New LWZ Contactors have no equal. The LINE-ARC principle insures long life of these massive contacts through cool operation. And destructive burning of the arc shields has been entirely eliminated by this scientific method of controlling the arc.

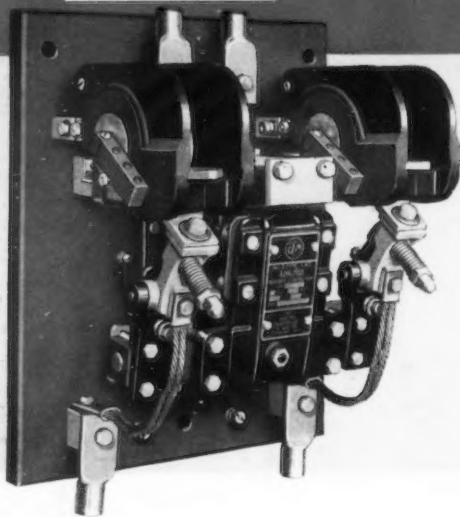
(see other side)

Quick, Uniform Response Insures Accurate Welding

The New EC&M TYPE LWZ WELDER CONTACTORS

have
Adjustable Contacts, Stainless
Steel Shaft, Nitralloy Bushings
and are of LINE-ARC Design

NO. 2W
TYPE LWZ
OPEN
WELDER
CONTACTOR

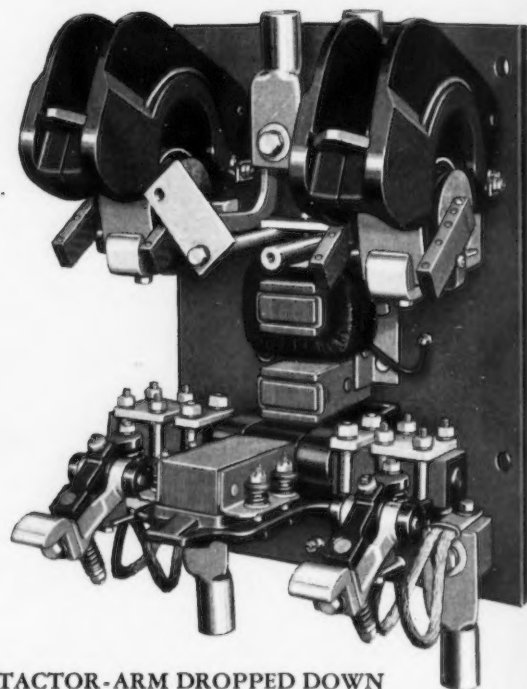


NO. 3W ENCLOSED TYPE LWZ
WELDER CONTACTOR

THERE IS no other contactor built like the New Type LWZ Welder Contactor. All parts are sturdy and of the best materials. Nitralloy Steel Bushings, for example, are used on all bearings and auxiliary-arm bearing pins are also of Nitrided Steel. The use of Stainless Steel for the main shaft eliminates corrosion and insures free movement of the shaft in its bearings throughout the life of the contactor.

As further proof of the quality of LWZ Contactors, consider the laminations in the armature and core. These are made of high-silicon steel and are supported to the base and to the contactor-arm by side-plates, made of stainless steel.

EC&M builds a complete line of low up-keep cost Welder Contactors—the No. 0W Type Z and the No. 1W Type LZ in the smaller sizes and the Nos. 2W, 3W, 4W and 5W Type LWZ in the larger sizes. Bulletin 1211 gives complete details. Write for your copy to-day.

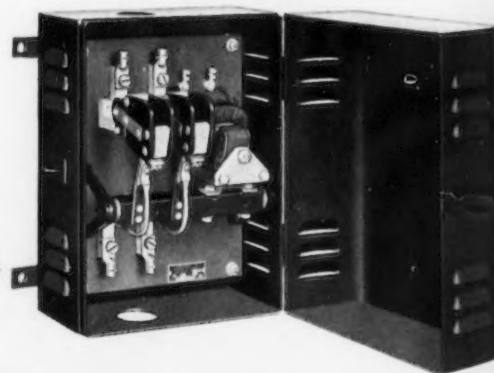


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SHOWING STURDY CONSTRUCTION



HEAVY DUTY MOTOR CONTROL
FOR CRANES, MILL DRIVES AND
MACHINERY • BRAKES • LIMIT
STOPS • LIFTING MAGNETS AND
AUTOMATIC WELD TIMERS.

NO. 0W
ENCLOSED WELDER
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THE ELECTRIC CONTROLLER & MFG. CO.
2706 E. 79th Street
Cleveland, Ohio

For GOOD WELDS at Low Cost, Specify Bulletin 1211
EC&M WELDER CONTACTORS

Monster Pie Dish on Wheels is Scrapped

London

• • • Villagers of Denby Dale, in Yorkshire, have surrendered to the National Scrap Campaign their famous monster pie-dish. Made of riveted steel plates with a gargantuan capacity of 22 cu. ft., the historic "baking tin" weighs 3500 lb., and is thus a useful contribution to the national effort. It is mounted on wheels and run into the huge brick oven on steel rails.

Last time it was used was in 1928 when it baked a colossal meat pie for the benefit of the Huddersfield Royal Infirmary. Preparations took three months with 22 women working one entire day to make the crust. More than 30,000 people arrived from all over Yorkshire to consume it.

which Mr. Willkie said that he intended to call if elected President.

The Republican nominee said that the present administration has "let labor down" because it has failed to provide jobs.

The role of labor, he added, should be that of a partner in free enterprise. He said:

"The American worker expects a chance to negotiate his terms of employment with business. That is right and I am for it. In my Administration I shall encourage collective bargaining as an essential part of the new American way of life.

It is only superficially that collective bargaining is a means of adjusting differences. More fundamentally, collective bargaining is a way of working together, labor and capital, to their common advance, their mutual and their joint interest, a higher standard of living for the American people.

Baldwin Works Orders Are Tripled in August

• • • The dollar value of orders taken in August by The Baldwin Locomotive Works and subsidiary companies, including the Midvale Co., is announced as \$16,490,709 as compared with \$5,972,204 for August, 1939. The month's bookings brought the total for the consolidated group for the eight months of 1940 to \$47,022,974 as compared with \$38,348,458 in the same period of 1939.

Cramp May Build 6 Cruisers for U. S.

• • • Upon successful negotiation of financing operations now in progress the new Cramp Shipbuilding Co., Philadelphia, formerly the William Cramp & Sons Ship & Engine Building Co., will undertake construction of six cruisers for the United States Navy. The projected vessels, valued at \$110,000,000, will

be of the "Cleveland" class and will have 10,000 to 11,000 tons displacement. Although production orders are expected to be given within a month actual construction will not begin for several months. Officers of the new company are James Reed, president; Joseph P. Ripley, chairman of the board; H. Birchard Taylor, vice-president; and Commander R. D. Weyerbacher, U.S.N., retired, vice-president.



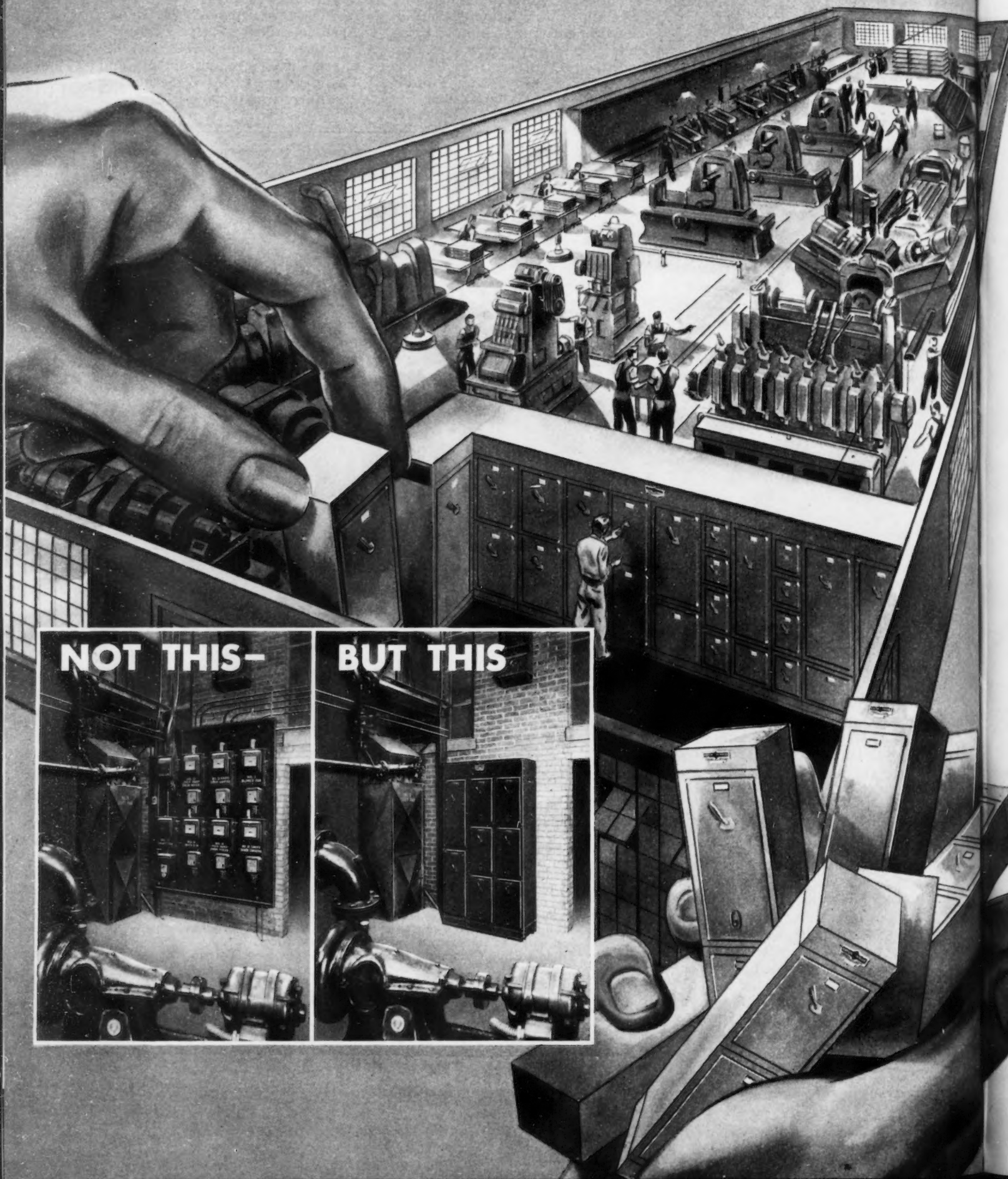
INDUSTRY
Looks to Toledo

● This is a percentage scale, Toledo-developed to solve a specific problem in curing hams.
You don't cure hams? No—but you probably use percentages in your own production. If so, the *basic principle* of this ham scale may help solve some of your problems, too.

Industry looks to Toledo for the solution of its tough weighing problems. And for greater accuracy and speed in its regular industrial weighing. This percentage scale is a symbol of Toledo's superior engineering knowledge and versatility. It's one of "45,000 Ways to Weigh"—and that's the title of a new illustrated brochure that you will find interesting and helpful. Send for it.
Toledo Scale Company, Industrial Scale Division, Toledo, Ohio.

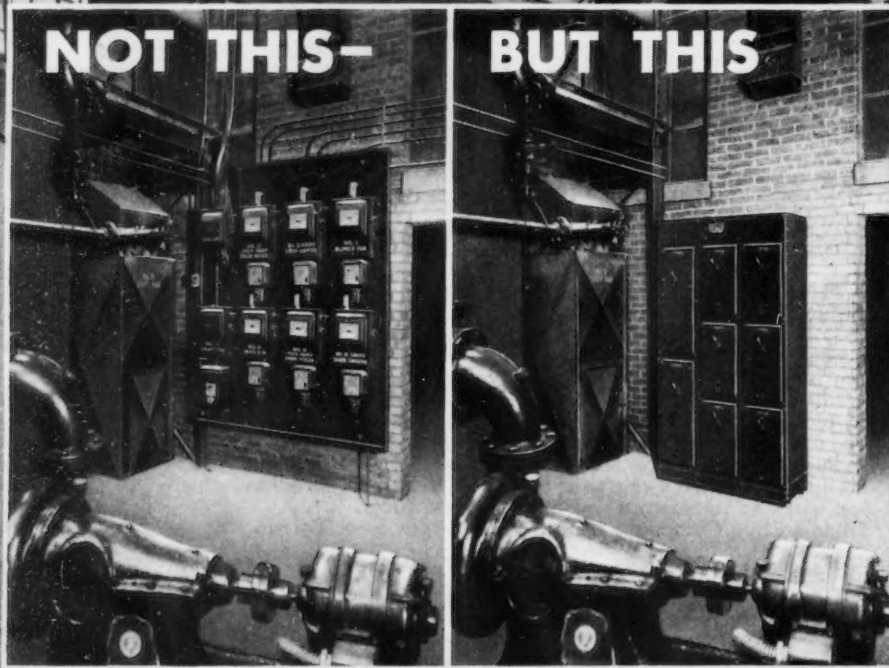
TOLEDO SCALES

NEWS..AN IMPORTANT



NOT THIS—

BUT THIS



ANT ANNOUNCEMENT

to All Users of Motor Control

**CUTLER-HAMMER LEADS AGAIN... TO MARK ANOTHER
MILESTONE OF ENGINEERING PROGRESS**

UNITROL

TRADE MARK

UNITROL

Sectionalized Motor Control

Unitrol is a new idea in Motor Control. It is a new unit type of standardized Motor Control construction which permits all needed types of control devices to be easily organized into a complete enclosed sectionalized Motor Control Center... making it just as big or just as small as your present needs require. It is easily, quickly and economically built up, without special engineering, containing just the individual controllers, disconnect switches, and accessories you specify.

Unitrol comes to you complete... either with all wiring, busses, supports, terminals and interconnections already made... or with provisions for wiring it "on the job". It may be changed, extended, or contracted later on, just as easily and economically as it was first built up. It saves space, time, trouble, worry, and inconvenience up and down the line; and its installed cost is less than the cost of any "home-made" substitute.

1st...The Unitrol Unit



The basic element of Unitrol is a simple unit mounting-frame into which any standard control device may be bolted. This unit frame has integral with it a hinged cover or door which may be blank, or arranged for either dead-front manual or push-button operation of the device enclosed.

2nd...The Unitrol Section

The Unitrol Section is a steel enclosure which houses and supports a group of Unitrol Units. It is constructed of standardized interchangeable members to form the sides, top and back... with unique provisions for bus supports, wiring troughs, conduit or duct entrances, etc.



3rd...The Unitrol Control Center

A Unitrol Control Center consists of a grouping of Unitrol Sections fabricated into a complete sectionalized assembly and delivered ready for installation and use.



Unitrol...Fits control to the job



Unitrol permits your control installation to be shaped at will... in a straight line, an L-shape, or a U-shape in which case it literally forms its own control room. In some instances, controls may be mounted back to back in the same section... resulting in a space economy hitherto undreamed of! And the individual control unit with its door frame forms a brand new time, cost, and trouble-saving "built-in" control for builders of motorized machines.

UNITROL

Solves many problems

DESIRABLE. Unitrol brings to your control all the simplicity and flexibility of the modern filing cabinet idea. It offers standardized uniformity, appearance and economy. It is the control of tomorrow... ready for today!

ADAPTABLE. Unitrol is a boon to builders. Its known dimensions and predictable costs permit intelligent planning, with no fuss or worry about placement of conduits in concrete. Unitrol fits right into the job, and can be revamped, changed or extended later with ease.

LOW COST. With Unitrol, there is no supporting structure to fabricate; no floor or wall preparation; no special engineering. Unitrol saves space and building alterations! One recent Unitrol installation put 132 motor starters into the same space which could not accommodate more than 50 conventional starters of the same rating.

Write for this book

A new book... "Unitrol... the next step forward in Motor Control," tells the whole important story. Gives full description of Unitrol, its many uses and amazing advantages, its construction and specifications. Profusely illustrated. Sent free by request on your business letterhead. Write for your copy today. CUTLER-HAMMER, Inc., Pioneer Electrical Manufacturers, 1325 St. Paul Avenue, Milwaukee, Wisconsin.



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THE MODERN SECTIONALIZED CONTROL CENTER



AT THE plant of the Otis Steel Company, Cleveland, steel sheets to be annealed are stacked on bases and covered with corrugated steel hoods. Gas furnaces are then swung over the hoods.

In these annealing operations, the bases are subjected to extreme heat and heavy loads. In previous experience, the bases broke down after 50 heats—had to be rebuilt. Since rebuilding with CAREY HI-TEMP and 85% MAGNESIA, the bases are as good as new after 50 heats.

The tougher the job, the more you need CAREY Insulations. Whatever your insulation problem, put it up to CAREY.

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THE PHILIP CAREY COMPANY • Lockland, Cincinnati, Ohio

Dependable Products Since 1873

BRANCHES IN PRINCIPAL CITIES

INDUSTRIAL BUILDING PRODUCTS OF
ASPHALT — ASBESTOS — MAGNESIA

Roofing • Siding • Flooring • Insulations • Expansion Joint
Roof Coatings and Cements • Waterproofing Materials
Asbestos Paper and Millboard



Carey Magnesia-Asbestos
HEAT INSULATIONS

A. O. Smith Corp. Now Making Water Heaters

Milwaukee

••• Applying production methods which have produced thousands of automobile frames, the A. O. Smith Corp. has taken another step toward diversification of production with the manufacture of automatic water heaters. They are designed to operate on either gas or electricity in individual capacities of from 15 to 80 gallons, with glass or galvanized linings. The company's present contract calls for 8000 units a month for one of the large mail order and department store merchandising organizations.

McKee Contracts 88% Ahead of '39 Volume

Cleveland

••• New contracts taken this year by Arthur G. McKee & Co., engineers and contractors, now are 88 per cent ahead of the total volume of contracts taken in 1939, according to a recent letter to stockholders. In June it was announced the increase stood at 55 per cent.

Robert E. Baker, secretary, said that "on the basis of present prospects, it appears likely this year's volume will exceed that of any previous year in the company's history." The dollar volume of business is about evenly divided between the iron and steel and oil refinery divisions. The only foreign work of magnitude is now in Canada and South America.

The company has paid a 75c. dividend on its Class B stock, making \$3 per share paid during the present year.

West Coast Industries Organized by Dominion

Vancouver, B. C.

••• West Coast Industries, Ltd., has been formed here to serve as a clearing house for all munitions orders placed by the Canadian government with metal trades plants west of the Rockies. The company is a non-profit organization. President of the company is Col. H. S. Tobin, vice chairman of the B. C. division of the Canadian Manufacturers' Association.

Industrial Training Topic Features A.S.T.E. Meeting

••• Immediate and long-range problems of special education to meet the increasing national shortage of tool engineers and tool designers, as well as skilled craftsmen for industry will be the prime subject of the semi-annual meeting of the American Society of Tool Engineers, scheduled for Cincinnati, Oct. 17 to 19. In addition to the report of the Educational Committee, which has been developing a projected special high school-industrial curriculum, the sessions will be highlighted by a number of addresses on various phases of the question of whether industry should assume the burden of special education.

"Importance of Engineering Preparedness" will be the topic of F. E. Searle, head of the Ford Trade School. Dr. R. C. Gowdy, dean, College of Engineering and Commerce, University of Cincinnati, will discuss "Cooperative Education." "Industry's Post-Graduate Course" is the subject of a discussion by W. S. Dowman, assistant director, sales and office personnel, Goodyear Tire & Rubber Co. Whiting Williams, industrial consultant, will talk on "What We Can Learn From Europe," while George Schiele, chief inspector, Cincinnati Milling Machine Co., will lead the discussion on the various papers presented.

Saturday's technical session will be devoted to a symposium on gear finishing, with papers on the various methods of finishing gears presented respectively by Marvin R. Anderson, vice-president, and Charles Staub, chief engineer, Michigan Tool Co.; Otto H. Schafer, president, Schafer Gear Works; I. J. Gruenberg, chief engineer, Gear Grinding Machine Co., and Charles Pfeffer, in charge of gear development and production, Wright Aeronautical Corp.

Arrangements have been made for visits to Cincinnati's various machine tool and industrial plants

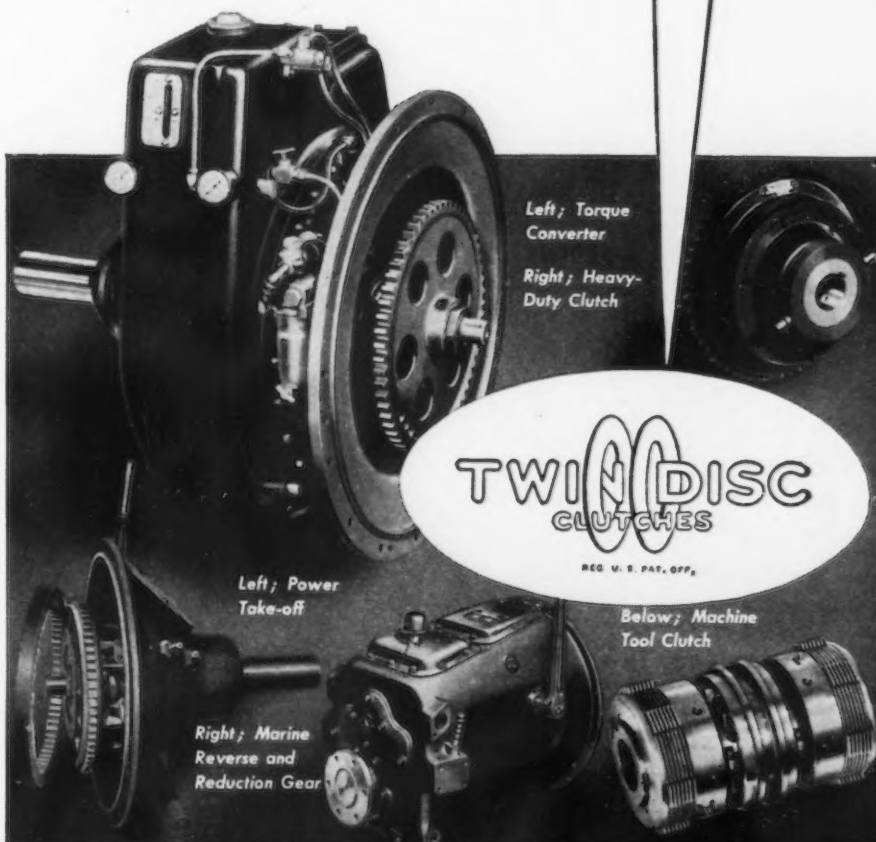
\$800,000 Defense Order For Cleveland Company

Cleveland

••• The Gabriel Co. here has negotiated a sub contract for the manufacture of shell components, involving more than \$800,000.

INCLUDING "Extras"

• The wide preference for Twin Disc products—clutches, power take-offs, reduction gears, hydraulic drives and marine gears—comes, not alone from their mechanical adaptability . . . the exceptional care used in material selection and specification, the professional craftsmanship that distinguishes each interchangeable part . . . but from the farsightedness and advanced engineering, the almost prophetic awareness to approaching changes, the constant looking ahead to the work that tomorrow's power transmission equipment will demand. These are the things that give Twin Disc products their "extras" in value. That's why we say: "Twin Disc Clutches are built for the job they will be called on to do, not merely to fit some machine of which they are an important part."



TWIN DISC CLUTCH CO. • 1370 RACINE ST. • RACINE, WIS.

August Structural Steel Shipments at 1940 High

•••Shipments of fabricated structural steel during August were the largest for any month so far this year, according to the American Institute of Steel Construction. August shipments of 124,301 tons compare with 121,315 tons in July, and average August shipments for the past five years of 133,967 tons.

Shipments during the first eight months of this year are 900,628 tons, as against 920,980 tons in the comparable period of 1939.

August bookings of 109,918 tons were down 79,952 tons from the 189,870 tons recorded in July, but the eight months' total for 1940 of 919,019 tons was slightly larger than the average of the corresponding period of the past five years of 907,119 tons.

NEW STANDARDS OF PERFORMANCE

Address
Bryant Machinery & Engineering Company
400 W. Madison St., Chicago, Ill., U. S. A.
Sales Division of
Cleereeman Machine Tool Company
Green Bay, Wis.

CLEEREMAN
DRILLING MACHINES and JIG BORERS

Government Awards

The War Department announces the following contracts (above \$15,000) have been cleared by the National Advisory Defense Commission and awarded for the Ordnance Department.

American Locomotive Co., New York, artillery material, \$3,132,800.

Duplex Printing Co., Battle Creek, Mich., artillery material, \$6,097,440.

Pullman-Standard Car Mfg. Co., Chicago, artillery material, \$5,775,575.

Autocar Co., Ardmore, Pa., half track personnel carriers, \$9,581,406.

Diamond T Motor Car Co., Chicago, Ill., half track personnel carriers, \$14,220,000.

American Car and Foundry Co., Berwick, Pa., tanks, with spare parts, \$37,687,458.

White Motor Co., Cleveland, Ohio, half track cars and scout cars, \$34,451,249.

Ward LaFrance Truck Corp., Elmira, N. Y., trucks, \$629,901.

Continental Motors Corp., Muskegon, Mich., engines, \$6,694,940.

American Car & Foundry Co., New York, tanks, \$669,315.

National Malleable Steel & Casting Co., Cleveland, Ohio, artillery ammunition components, \$1,470,000.

Schweitzer-Cummins Co., Indianapolis, artillery ammunition components, \$1,596,695.

General Motors Corp., Anderson, Ind., artillery ammunition components, \$1,057,500.

Omaha Steel Works, Omaha, Neb., artillery ammunition components, \$2,462,500.

Pressed Steel Car Co., Chicago, artillery ammunition components, \$2,191,000.

Mueller Co., Columbian Iron Works, Chattanooga, Tenn., artillery ammunition components, \$1,008,655.

Hercules Powder Co., Kenil, N. J., smokeless powder, \$298,800.

Robertshaw Thermostat Co., Youngwood, Pa., ammunition components, \$431,819.

Eastman Kodak Co., Rochester, N. Y., fire control equipment, \$34,315.

Continental Motors Corp., Muskegon, Mich., engines and miscellaneous parts, \$186,628.

Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., small arms material, \$20,805.

Pratt & Whitney Div., Niles-Bement-Pond Co., Hartford, Conn., drilling machines, \$80,172.

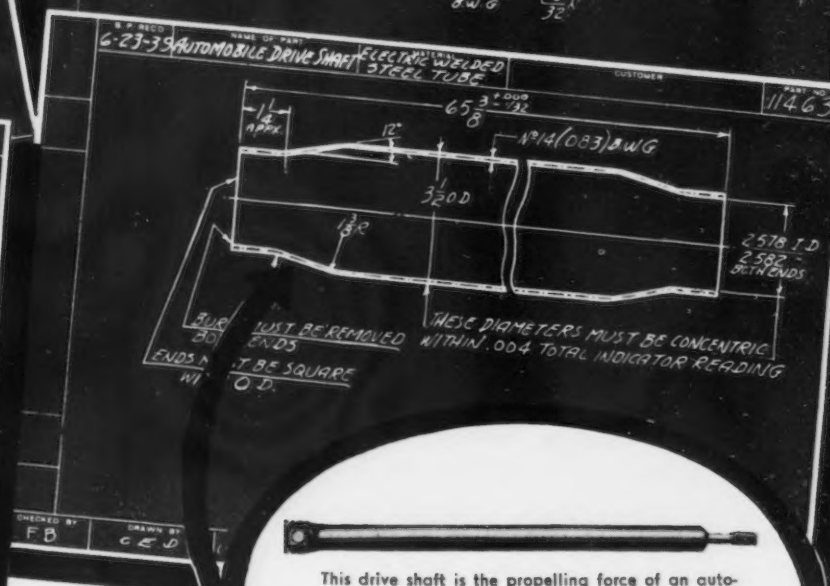
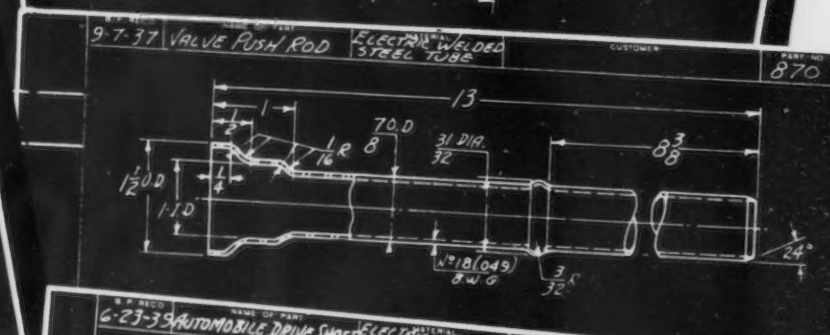
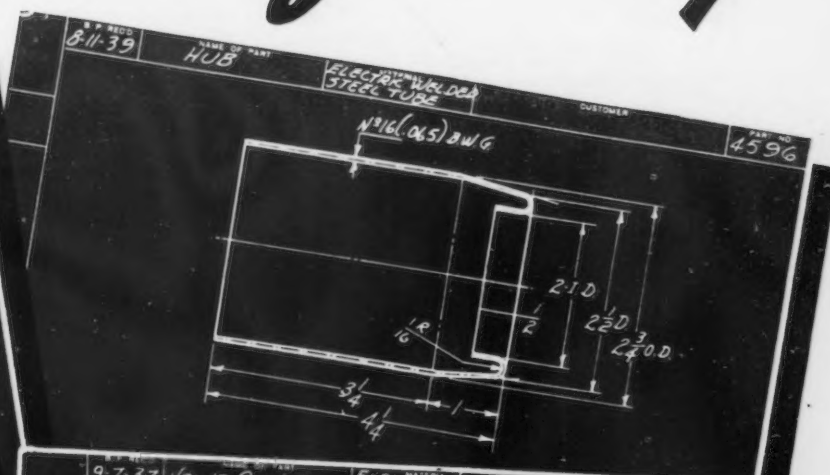
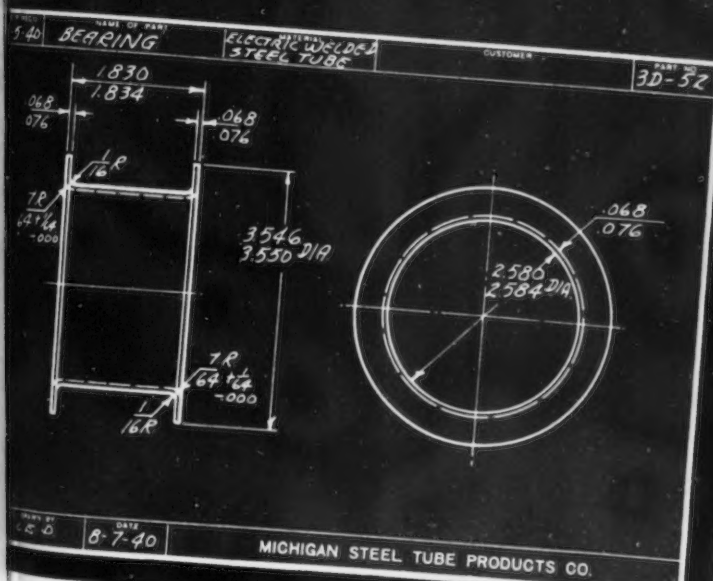
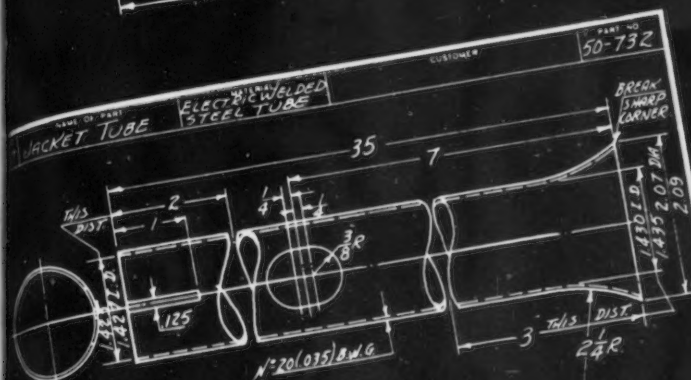
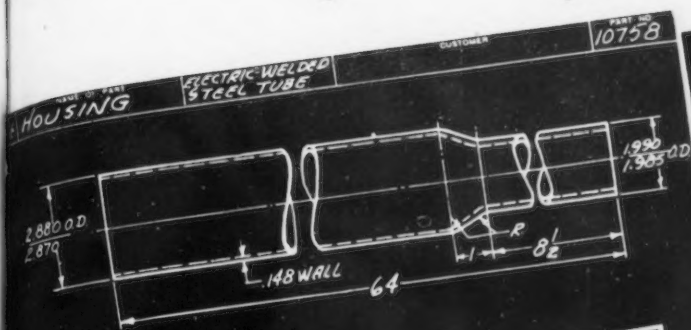
Kearney & Trecker Corp., Milwaukee, Wis., milling machines, \$46,535.

Smith-Courtney Co., Richmond, Va., steam hammer, \$11,500.

Reed-Prentice Corp., Worcester, Mass., lathes, \$17,168.

Micro-Westco, Inc., Bettendorf, Iowa, grinder, \$21,119.

Everyday line of Duty



This drive shaft is the propelling force of an automobile, tractor, truck, or bus. Michigan Electric Welded Tubing is universally selected for this purpose because of its balance, uniform wall, and high critical speed. It is hydraulically tested and made from cold rolled strip with bonded grain structure.

You do not have to look very far to discover in these shop drawings of volume production parts passing daily through our plant, convincing evidence of our ability to produce shapes or supply analysis of steel tubing to fit all your needs. Therefore, we are laying great stress on our product and our ability to serve our government in the Nation's Defense Program for such products as aeroplane tubing, mechanical tubing, boiler and pressure tubing.

**YES! OUR TUBING IS WELDED
("WALLS WITH WELDS")**

Are you aware of the fact that welding is recognized as the modern method and is now universally used in the products of the following industries:

Automotive — Aeroplane — Government Armoured
Tanks — Boilers — Boat Building — Building Con-
struction — Railroad Locomotive Freight Cars,
Coaches and Pullmans — Bridge Construction —
Farm Implements — Dairy — Bicycles — Conveyors
— Refrigeration — Oil Country Products — Machinery
Building — Metal Furniture.

"MICHIGAN" - The Modern Electric Resistance Welded Tubing

MICHIGAN STEEL TUBE PRODUCTS CO.

Offices: Detroit, Mich.

Factories: Detroit and Shelby, O.

MECHANICAL STEEL TUBE DISTRIBUTORS—Steel Sales Corp., Detroit, Chicago, St. Louis, and Milwaukee—Miller Steel Co., Inc., Newark, N. J.—C. L. Hyland, Dayton, O.—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—American Tubular and Steel Products Co., Pittsburgh, Pa.—Strong Carlisle and Hammond Co., Cleveland, O.



The Watson-Stillman Co., Roselle, N. J., pump, \$18,500.
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn., borer machines, \$19,440.
Bass Engineering & Construction Co., Detroit, Mich., water treatment system, \$17,361.
Harnischfeger Corp., Milwaukee, Wis., bridge cranes, \$21,985.
The Murphy Elevator Co., Louisville, Ky., elevators, \$34,444.
Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., bridge cranes, \$227,940.

Fred J. Early, Jr., Co., San Francisco, Calif., pumping plant, \$21,663.
Ingersoll-Rand Co., Washington, D. C., exhausters, \$132,750.
The American Laundry Machinery Co., Cincinnati, Ohio, laundry equipment, \$49,819.
Nordberg Mfg. Co., Milwaukee, Wis., air compressor, \$55,521.
Sager-Spuck Supply Co., Inc., Albany, N. Y., shaper, \$15,981.
R. S. Armstrong & Bro. Co., Atlanta, Ga., lathes, \$20,884.
Kearney & Trecker Corp., Milwaukee, Wis., milling machines, \$17,341.

Universal Gear Corp., Indianapolis, Ind., gear boxes, \$19,475.
SKF Industries, Inc., Philadelphia, Pa., bearings, \$32,373.
Vandyck Churchill Co., Philadelphia, Pa., boring machine, \$12,270.
Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, Ohio, grinders, \$15,662.
W. E. Shipley Machinery Co., Philadelphia, Pa., machine, \$12,665.
Allis-Chalmers Mfg. Co., Milwaukee, Wis., motor graders, tractors, \$18,002.
Chicago Pneumatic Tool Co., Philadelphia, Pa., pneumatic drills, \$14,761.
Eaton Mfg. Co., Wilcox-Rich Division, Detroit, Mich., seat valve, \$76,781.
Brown & Sharpe Mfg. Co., Providence, R. I., screw machines, \$17,949.
Stewart Warner Corp., Chicago, artillery ammunition components, \$1,381,600.
Pullman Standard Car Mfg. Co., Butler, Pa., artillery ammunition components, \$1,134,000.
National Supply Co., Ambridge, Pa., artillery ammunition components, \$720,000.
Norris Stamping & Mfg. Co., Los Angeles, Cal., artillery ammunition components, \$2,544,000.
Electric Auto-Lite Co., Toledo, Ohio, artillery ammunition components, \$780,000.
Scovill Mfg. Co., Waterbury Conn., artillery ammunition components, \$2,358,000.
Chase Brass & Copper Co., Waterbury, Conn., artillery ammunition components, \$806,000.
General Motors Corp., Anderson, Ind., artillery ammunition components, \$2,536,000.
Pennsylvania Forge Corp., Philadelphia, artillery ammunition components, \$790,000.
General Motors Corp., Dayton, Ohio, artillery ammunition components, \$1,208,199.
Independent Lock Co., Fitchburg, Mass., artillery ammunition components, \$965,000.
Eastern Rolling Mill Co., Baltimore, Md., artillery ammunition components, \$1,883,000.
Pressed Steel Car Co., Inc., Pittsburgh, artillery ammunition components, \$1,230,000.
A. O. Smith Corp., Milwaukee, Wis., artillery ammunition components, \$3,561,500.
Electric Art Cutting & Welding Co., Newark, N. J., generating units, \$106,835.
Bausch & Lomb Optical Co., Rochester, N. Y., binoculars, \$162,520.
Lundquist Tools & Mfg. Co., Worcester, Mass., telescope mounts, \$28,798.
S. K. Wellman Co., Cleveland, Ohio, facings and rivets, \$21,010.
Revere Copper & Brass, Inc., Baltimore Div., Baltimore, Md., ammunition components, \$268,100.
American Brass Co., Waterbury, (CONTINUED ON PAGE 98)

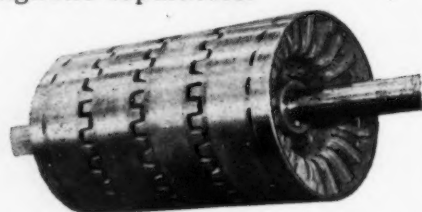


LOST—A. W. O. L.—vanished without a trace—it seems incredible, but a checkup could easily reveal such a loss in many foundries not using magnetic separators.

It really wouldn't be hard to find that iron. It's in the dump pile, the slag pile, the sand pile—worst of all, it's mixed in the sand of molds being poured right now. Not only is that iron lost to productive use, but some of it is ruining castings, causing imperfections, rejects, lost profits.

Sprues, risers, gates and fine shot iron must be taken out of used foundry sand. Magnetic separation is the only positive way — the most economical way to remove this iron. And the Dings High Intensity Magnetic Pulley is the most powerful pulley on the market size for size! It will pay for itself with the iron it saves, the time it saves, the improved castings it makes possible. Write for details today and send a sample of your used sand for free magnetic analysis.

**DINGS MAGNETIC
SEPARATOR COMPANY**
727 Smith St.
Milwaukee, Wisconsin



**The Most Powerful
Magnetic Pulley on the
Market—Size for Size!**

Bronze spacers and coil covers which do not short-circuit lines of force or reduce pulling power—**air-cooled construction** (corrugated radial openings, longitudinal openings, impeller hub design) for cooler operation, more power—these are exclusive features of the Dings High Intensity Magnetic Pulley—features that make it the pulley for your plant.

Dings
High Intensity
**MAGNETIC
SEPARATION**

For Material Handling — DINGS LIFTING MAGNETS

NEWS OF INDUSTRY

Trade Notes

Stearns, Perry & Smith, 51 Chardon Street, Boston, have been appointed district agents for the Boston territory by Janette Mfg. Co., Chicago. This company builds speed reducers, rotary converters, motor generators and blower wheels.

Capewell Mfg. Co., Hartford, Conn., established in 1881, has completed installation of new equipment for manufacture of hack saw blades of all sizes and types. This new division is in charge of David A. Utiger.

Micromatic Hone Corp. has moved its offices and manufacturing activities to 1345 East Milwaukee Avenue, Detroit.

Massachusetts Steel Treating Corp., Worcester, Mass., is building an addition to its present plant and is installing a new brine pit quenching tank of concrete (10 ft. deep, 45½ ft. long and 6 ft. wide).

R. & L. Tools Co., 1825 Bristol Street, Philadelphia, have occupied the second floor of the building in which they are located, doubling their floor space.

R. C. Stanhope, Inc., machinery, equipment, and steel products, announces it has moved into larger quarters in the Lincoln Building, 60 East 42nd Street, New York.

Coffing Hoist Co., makers of ratchet level hoists and other equipment, has moved its plant and offices into a new factory at Danville, Ill. F. W. Coffing is president.

Machine Tool Engineering Co. has been launched at Cleveland by Donald Geck with his brother, Carl. The company, located for the present at 2205 Middlefield Road, will center its attention on design, drafting, jigs, and fixtures, and is equipped to do precision machine work.

Arnold L. Nacke has been appointed sales agent in New York City for Modern Tool Works, Rochester, N. Y. He will handle sales of Modern magic chucks, die heads and other Modern tools in the Metropolitan District. Offices are at 92 Bleecker Street, New York.

Ohio Gear Co., Cleveland, announces its appointment as national distributor for the products of the Browning Mfg. Co., Maysville, Ky.

Koebel Diamond Tool Co., Detroit, has moved to a new factory facing the Detroit City Airport. The company's products are sold under the trade name Koebelite.

Babcock & Wilcox Tube Co., Beaver Falls, Pa., announces appointment of MacFarlane Foundry & Honolulu Iron Works, S.A., Sagua La Grande, Cuba, as boiler tube distributor and agent for B. & W. seamless steel tubular

products in Cuba. They have business offices in Apartado No. 109, Edif. Gomez Mena, Habana, Cuba.

Bertsch Machinery Co. is now located in its new office at 972 Broad Street, Newark, N. J.

Weldon Engineering Co. has been established to act as factory representatives in Chicago for Electro Lift, Inc., National Time & Signal Corp. and Ross Operating Valve Co.

Tomkins-Johnson Co., Jackson, Mich., makers of air cylinders, remote control valves and other products, have appointed Ralph W. Atkinson, 215 West 7th Street, Los Angeles, as California sales representative and Weldon Engineering Co., 1791 Howard Street, Chicago, as Chicago district representative.

Liberty Planer & Mfg. Co., Hamilton, Ohio, has been formed to succeed the Liberty Machine Tool Co. in the manufacture of Liberty planers. The new company will manufacture the complete line of Liberty double housing, openside and convertible planers. Harry A. Dingeldein is president, H. R. Ryan vice-president and L. G. L. Thomas, secretary-treasurer.

Geometric Tool Co., New Haven, Conn., makers of machinery and tools for cutting screw threads, announce that sale of its products in northeastern Ohio has been taken over by its Detroit office, the Boulevard Building, Detroit.



*Easy handling
saves 35%*

**SAVINGS
In Operating Costs**

The No 1-S, 25" CINCINNATI ACME is designed for easy handling of large diameter medium duty chucking work that would ordinarily require a large heavy duty and more cumbersome machine.

A leading valve manufacturer reports 35% savings in his manufacturing costs.

The production value of this CINCINNATI ACME has been proven in shipyards, Navy yards, valve shops and other manufacturing plants.

Swings: 27" over bed; 25" over carriage wings; 19" over cross slide.

WRITE FOR BULLETIN G-103

THE ACME MACHINE TOOL COMPANY CINCINNATI OHIO

VISIT OUR PLANT
DURING THE
AMERICAN SOCIETY OF TOOL ENGINEERS
ASTE
CONVENTION
OCT-17-18-19
CINCINNATI, OHIO.

Government**Awards**

(CONTINUED FROM PAGE 94)

Conn., ammunition components, \$418,575.
 National Lead Co., Atlantic Branch-Metal Div., New York, antimony alloy lead, \$20,480.
 E. Bers & Co., Philadelphia, antimony alloy lead, \$28,250.
 National Pneumatic Co., Rahway, N. J., ammunition components, \$154,020.
 Doehler Die Casting Co., Pottstown, Pa., ammunition components, \$28,900.
 Bell & Howell Company, Chicago, fire control equipment, \$152,733.
 Revere Copper & Brass, Inc., Baltimore Div., Baltimore, small arms ammunition components, \$115,700.
 American Brass Co., Waterbury, Conn., small arms ammunition components, \$111,031.
 Chase Brass & Copper Co., Waterbury, Conn., small arms ammunition components, \$106,734.
 E. I. duPont de Nemours & Co., Inc., Barksdale, Wis., ammunition components, \$305,500.
 Pratt & Whitney Div., Niles-Bement-Pond Co., Hartford, Conn., boring machines, \$17,506.

H. A. Smith Machinery Co., Syracuse, N. Y., milling machines, \$50,696.
 Henry Prentiss & Co., Inc., Cincinnati, lathes, \$26,841.

Navy Contracts

Pacific Car & Foundry Co., Seattle, Wash., railroad cars, \$14,245.
 Birchfield Boiler, Inc., Tacoma, Wash., lighter, covered, \$65,650.
 Samuel Levine, New York, unions, iron, \$15,698.
 Swind Machinery Co., Philadelphia, machine, horizontal boring, drilling and milling, \$29,891.
 The Auto Sales & Service Co., Washington, D. C., trucks, motor, \$176,890.
 Northern Pump Co., Minneapolis, hydraulic drive gear for towing carriage, \$32,975.
 Kearney & Trecker Corp., Milwaukee, milling machines, \$31,151.
 General Electric Co., Schenectady, electric cable, \$155,594.
 Anaconda Wire & Cable Co., Washington, D. C., cable, electric, \$155,250.
 Phelps Dodge Copper Products Corp., Habirshaw Cable & Wire Div., New York, cable, electric, \$155,718.
 National Electric Products Corp., Pittsburgh, cable, electric, \$153,875.

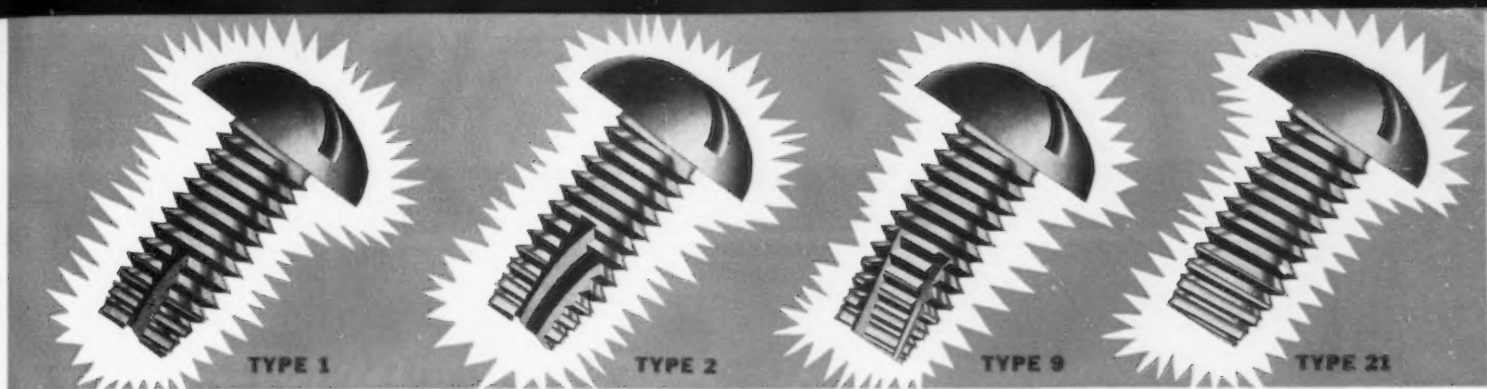
Sheffield Steel Corp., Kansas City, bolts and nuts, \$47,124.
 Superior Valve & Fittings Co., Pittsburgh, valves, cylinder, \$19,846.
 Kennedy Valve Mfg. Co., Elmira, N. Y., fittings, pipe, \$17,656.
 Okonite Co., Passaic, N. J., electric cable, \$28,908.
 American Steel & Wire Co. of New Jersey, Worcester, electric cable, \$28,051.
 General Electric Co., Schenectady, electric cable, \$28,550.
 Phelps Dodge Copper Products Corp., Yonkers, N. Y., cable, \$29,083.
 Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, milling machines, \$46,200.
 Rockbestos Products Corp., New Haven, Conn., electric cable, \$42,688.
 The Lodge & Shipley Machine Tool Co., Cincinnati, lathes, precision, \$23,255.
 Monarch Machine Tool Co., Sidney, Ohio, lathes, engine, \$33,821.
 General Cable Corp., Washington, D. C. (Rome, N. Y., Bayonne, N. J., Perth Amboy, N. J.), electric cable, \$154,890.
 Collyer Insulated Wire Co., Pawtucket, R. I., electric cable, \$154,936.
 The Okonite Co., Passaic, N. J., electric cable, \$153,288.
 Rockbestos Products Corp., New

ELIMINATE UNCERTAINTIES***Specify*****WILLIAM JESSOP & SONS
TOOL and DIE STEELS**

Eliminate Trouble and Uncertainty and enhance the reputation of your product — Use Tool Steel with a *Background* " " Jessop's Sheffield Tool Steels have a background of over 165 years' faithful service to the tool steel users—Specify Jessop's for your next job. " " Jessop's Manufactory in Sheffield, England, has been successful in maintaining its Export position in spite of adverse circumstances. Today our tool steel stocks upwards of 600 tons is our guarantee of real service to its users.

NEW YORK **CHICAGO** **BOSTON** **DETROIT**
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Agencies Located in All Principal Cities



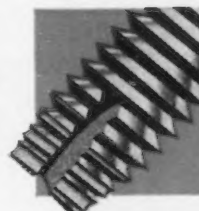
Now **SHAKEPROOF** offers 3 types of *Thread-Cutting* screws and a new thread-forming screw!



**SPEED UP YOUR
ASSEMBLIES...
GET TIGHTER,
STRONGER
FASTENINGS!**

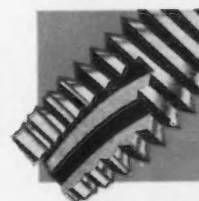
TYPE 1—(Standard) for all Metal Applications

This screw, with its exclusive spring-action slot, actually cuts its own thread in any thickness of metal. Thus, a tight fit is always certain and a stronger fastening results because of the perfect engagement between the screw and work.



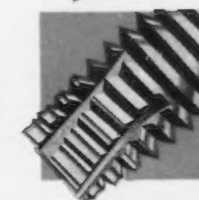
TYPE 2—Specially designed for Plastics

Because of its double-width slot, this screw has an acute, serrated cutting edge which produces clean-cut threads in either molded or laminated plastics. Its use eliminates the need for threaded inserts or a separate tapping operation.



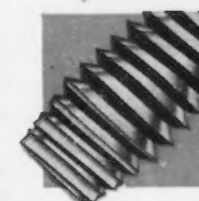
TYPE 9—For both Metals and Plastics

The multiple cutting flutes on this screw assure easy driving in both metals and plastics. Working like a tap, it cuts the thread in which the screw remains—assuring a snug, dependable fastening.



TYPE 21—(Thread-forming) for all Metals.

Although this screw does not actually cut its own threads, it is specially hardened so that when driven into metals it forms a thread which gives it substantial holding strength. Made with standard machine screw threads, its engagement with the work is greater than most types of thread-forming screws.



SEND FOR FREE TESTING SAMPLES!

See for yourself! Be sure to state type, size and head desired. Write today!

SHAKEPROOF LOCK WASHER CO.

Distributor of Shakeproof Products Manufactured by ILLINOIS TOOL WORKS

2511 North Keeler Avenue, Chicago, Illinois

Plants at Chicago and Elgin, Illinois

In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario

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SHAKEPROOF

SEMS Fastener Units... Lock Washers
... Locking and Plain Terminals

*Fastening
Headquarters*

Thread-Cutting Screws... Locking Screws
... Spring Washers... Special Stampings



Haven, Conn., electric cable, \$155,344.
 American Steel & Wire Co. of New Jersey, Worcester, electric cable, \$156,240.
 Anaconda Wire & Cable Co., Washington, D. C., electric cable, \$55,653.
 Collyer Insulated Wire Co., Pawtucket, R. I., electric cable, \$28,133.
 National Electric Products Corp., Pittsburgh, electric cable, \$28,156.
 The Okonite Co., Passaic, N. J., electric cable, \$40,699.

General Electric Co., Schenectady, electric cable, \$40,382.
 National Electric Products Corp., Pittsburgh, electric cable, \$40,825.
 Anaconda Wire & Cable Co., Washington, D. C., electric cable, \$40,446.
 Collyer Insulated Wire Co., Pawtucket, R. I., electric cable, \$40,786.
 Phelps Dodge Copper Products Corp., Habirshaw Cable & Wire Div., New York, electric cable, \$40,886.

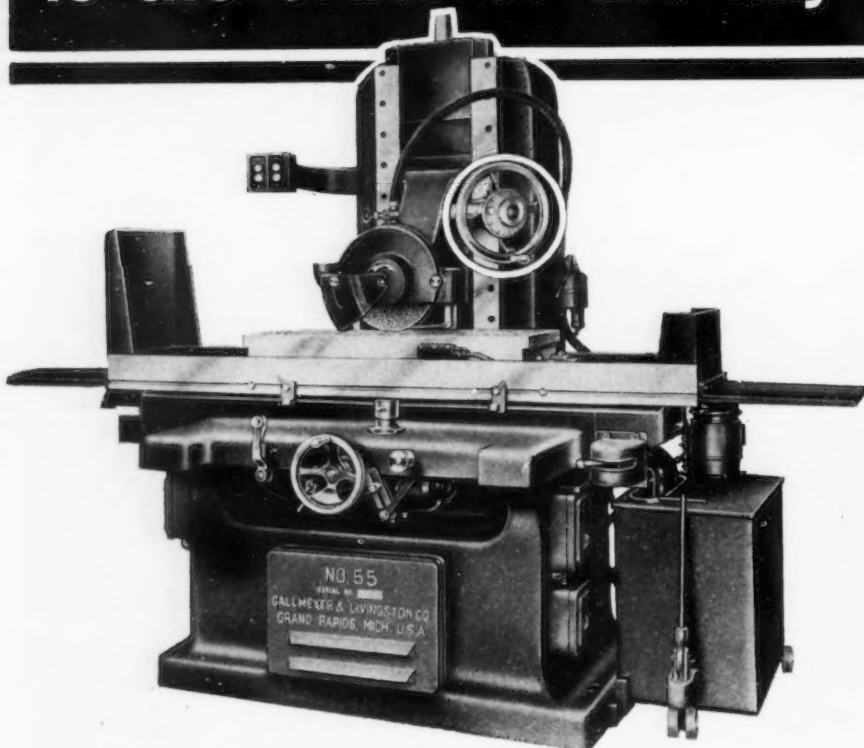
General Cable Corp., Washington, D. C., electric cable, \$40,699.

Government awards (above \$15,000) announced by the Division of Public Contracts, Labor Department, in week ended Sept. 28 follow:

Iron and Steel Products:

Artistic Iron Products Co., Cleveland, O., windows, louvers, \$27,910.
 Noland Co., Washington, D. C., lavatories, \$19,884.
 Kline Iron & Metal Co., Columbia, S. C., structural steel, \$22,500.
 Wittek Mfg. Co., Chicago, hose clamp, \$16,768.
 The Harvey Metal Corp., Chicago, forgings, \$145,800.
 Bliss & Laughlin, Inc., Buffalo, steel rod, \$33,220.
 Air Reduction Sales Co., New York, torches, \$20,340.
 Seattle Plumbing Supply Co., Seattle, Wash., plumbing supplies, \$20,179.
 The American Brass Co., Waterbury Brass Goods Branch, Waterbury, Conn., grommets, spur, \$26,892.
 Walter Kidde & Co., Inc., New York, cylinders, steel, \$31,334.
 Macomber, Inc., Canton, Ohio, landing mat panels, \$22,934.
 Reliance Steel Products Co., McKeesport, Pa., landing mat panels, \$31,986.
 American Forge Div. of The American Brake Shoe & Foundry Co., Chicago, forgings, \$244,110.
 H. L. Judd Co., New York, bolt & nuts, \$29,000.
 R. Hoe & Co., Inc., New York, recoil mechanisms, \$732,000.
 Standard Machinery Co., Providence R. I., gun mounts, \$13,534.
 Midvale Co., Philadelphia, Pa., barrels, \$1,260,308.
 Crucible Steel Co. of America, New York, steel, tool, \$45,242.
 Sargent & Co., New Haven, Conn., bolts & hooks, \$16,800.
 Crown Can Co., Div. of Crown Cork & Seal Co., Inc., Philadelphia, chemical containers, \$71,354.
 Continental Can Co., Inc., New York, canister parts, \$29,301.
 Hershey Metal Products, Inc., Derby, Conn., steel cores, \$45,600.
 American Locomotive Co., Schenectady, N. Y., forgings, \$51,895.
 Stanley G. Flagg & Co., Inc., Philadelphia, Pa., flanges, pipe, \$39,938.
 National Tube Co., Washington, D. C., flasks, steel, \$177,230.
 United States Steel Export Co., Washington, D. C., spillway gates, \$67,101.
 The Tri-State Pipe Co., Bellaire, Ohio, used pipe, \$25,345.
 Wackman Welded Ware Co., St. Louis, Mo., stoves, tent, \$39,600.
 Buhl Stamping Co., Detroit, cans, milk, \$53,600.
 Minneapolis Honeywell Regulator Co., Philadelphia, Pa., stand assemblies, \$45,742.
 McCulloch Mfg. Co., South Boston, Mass., auto, rifle parts, \$27,902.
 The B. Jahn Mfg. Co., New Britain, Conn., forming dies, \$17,310.

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**...How well this
surface grinder meets the need**

CAPACITY—12" x 17" x 36"
SPEED—UP TO 115 FT. PER MINUTE
POWER—MORE THAN AMPLE
WEIGHT—7500 LBS. NET

MANY REFINEMENTS INCLUDING ONE-SHOT LUBRICATING SYSTEM—TWO SPINDLE SPEEDS—PATENTED VERTICAL MOVEMENT OF WHEEL HEAD, ETC. If you need speed-up in your plant, why not consult with us.

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 GRAND RAPIDS, MICHIGAN

*"Ferro-Alloys ★ ★ ★
of Proven Quality"*



*Ohio Ferro-Alloys Corporation
Canton, Ohio*

Pullman-Standard Car Mfg. Co., New York, mortars, \$838,150.

Kennedy-Van Saun Mfg. & Eng. Corp., Danville, Pa., mortars, \$638,269.

Froiland Mfg. Co., Springfield, Mass., antenna, \$83,075.

Bethlehem Steel Co., Los Angeles, Cal., steel bars, \$15,480.

Non-ferrous Metals and Alloys:

The Aluminum Cooking Utensil Co., New Kensington, Pa., aluminum ware, \$10,901.

Scovill Mfg. Co., Waterbury, Conn., tooth brush cont., \$25,821.

Philadelphia Bronze & Brass Corp., Philadelphia, Pa., bronze castings, \$12,275.

Other Machinery:

Cincinnati Milling Machines and Cincinnati Grinders, Inc., Cincinnati, Ohio, grinding machines, \$20,026.

Henry Prentiss & Co., Inc., New York, boring mill, \$44,670.

The Lodge & Shipley Machine Tool

Co., Cincinnati, Ohio, engine lathes, \$119,756.

The Bullard Co., Bridgeport, Conn., lathes, turret, \$49,431.

Lloyd & Arms, Inc., Philadelphia, Pa., lathes, \$10,509.

F. J. Stokes Machine Co., Philadelphia, Pa., dryers, \$10,920.

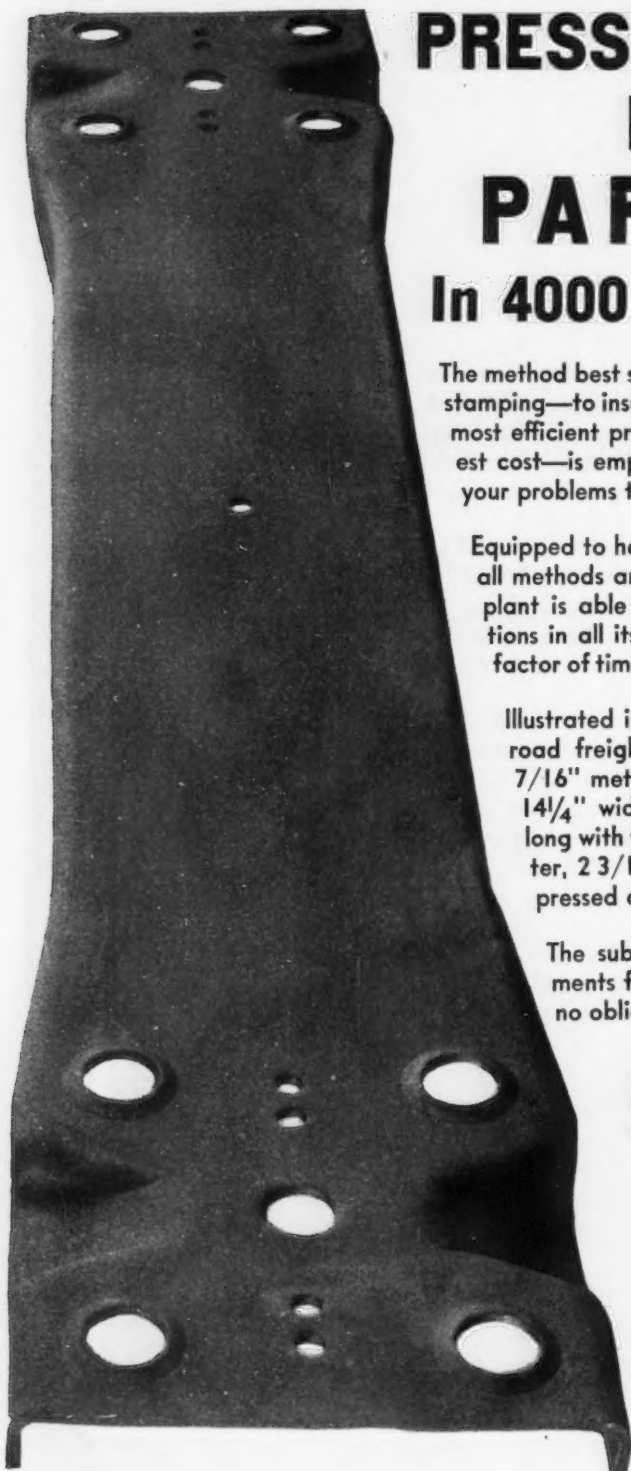
Continental Motors Corp., Muskegon, Mich., engine parts, \$69,082.

Hannifin Mfg. Co., Chicago, Ill., recoil mechanism, \$244,061.

Bay City Shovels, Inc., Bay City, Mich., power shovels, \$17,100.

E. W. Bliss Co., Brooklyn, New York, toggle presses, \$49,950.

Henry Prentiss & Co., Inc., Boston, Mass., milling mchs., \$62,454.



PRESSED COLD by PARISH In 4000 ton Press

The method best suited for each particular stamping—to insure most effective results, most efficient production and most modest cost—is employed when you present your problems to the Parish plant.

Equipped to handle all types of work in all methods and sizes of stamping, our plant is able to meet your specifications in all its elements, including the factor of time.

Illustrated is a Spring Plank for railroad freight car trucks. Made of 7/16" metal—16 5/8" wide at ends, 14 1/4" wide at center, and 93 1/4" long with flanges 3 3/8" high at center, 2 3/16" high at ends—it was pressed cold from heavy steel.

The submission of your requirements for review involves you in no obligation.

PARISH PRESSED STEEL CO.

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Pacific Coast Representative
F. Somers Peterson Co.,
57 California St.,
San Francisco, California



Milcor Steel Will Match Army Pay

... Milcor Steel Co., Milwaukee, manufacturer of steel building products and accessories, has announced that it will match the army pay envelope, dollar for dollar, for any of its employees who are called to the colors under the Selective Service law. The announcement was made by Earl A. Tanner, president.

Henry Prentiss & Co., Inc., Boston, Mass., milling mchs., \$67,005.

Bethlehem Steel Co., Quincy, Mass., turbine parts, \$48,558.

Bullard Co., Bridgeport, Conn., lathes, \$37,625.

Kearney & Trecker Corp., Milwaukee, Wis., milling mchs., \$59,763.

American Tool Works Co., Cincinnati, Ohio, drilling mchs., \$15,570.

Otis Elevator Co., Washington, D. C., elevators, \$36,530.

American Tube Bending Co., New Haven, Conn., engine parts, \$23,171.

Chicago Flexible Shaft Co., Chicago, Ill., clipping mchs., \$15,202.

Buffalo Pumps, Inc., Buffalo, N. Y., pumps, \$36,540.

Wilson - Weesner - Wilkinson Co., Knoxville, Tenn., gantry cranes, \$171,225.

American Hoist & Derrick Co., St. Paul, Minn., crane, \$32,207.

Hires, Castner & Harris, Inc., Philadelphia, Pa., primer mfg. equip., \$15,385.

Axelson Mfg. Co., Los Angeles, Cal., engine lathes, \$61,459.

Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, Ohio, milling mchs., \$103,957.

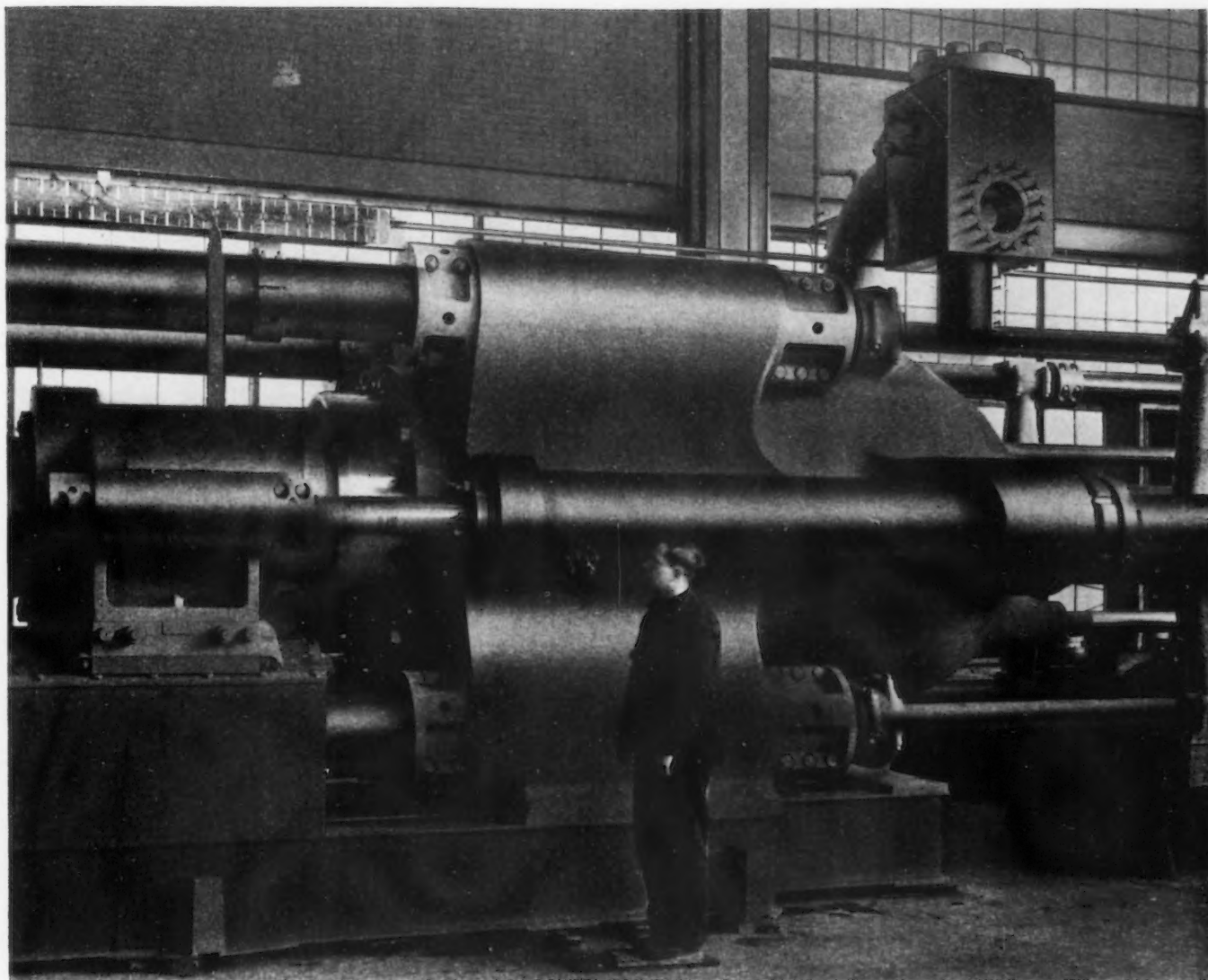
Brown & Sharpe Mfg. Co., Providence, R. I., milling mchs., \$40,819.

The Warner & Swasey Co., Cleveland, Ohio, turret lathes, \$32,475.

H. R. Krueger & Co., Detroit, Mich., drilling mch., \$31,200.

Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, Ohio, broaching mch., \$65,687.

H. R. Krueger & Co., Detroit, Mich., reaming mch., \$21,500.



Power End of a 4000 - Ton Rod
and Tube Extrusion Press for
Non-Ferrous Metals

SCHLOEMANN

HYDRAULIC EXTRUSION PRESSES

AIR - HYDRAULIC ACCUMULATORS

HIGH PRESSURE PUMPS

COMPLETE HYDRAULIC SYSTEMS

SCHLOEMANN

ENGINEERING CORP.
Rolling Mill Machinery

PITTSBURGH, PA.
Hydraulic Presses

H. R. Krueger & Co., Detroit, Mich., chamfering mch., \$29,935.
Chambersburg Engineering Co., Chambersburg, Pa., drop hammers, \$53,525.
The Toledo Machine & Tool Div., E. W. Bliss Co., Toledo, Ohio, coining presses, \$16,433.
The Billings & Spencer Co., Hartford, Conn., trimming presses, \$15,675.
Continental Tool Works, Div. of Ex-Cell-O Corp., Detroit, Mich., broaches, \$10,935.

Kingsbury Machine Tool Corp., Keene, N. H., drilling mch., \$15,841.
Pratt & Whitney, Div. Niles-Bement-Pond Co., Hartford, Conn., rifling mchs., \$102,150.
Pratt & Whitney Div., Niles-Bement-Pond Co., Hartford, Conn., chamfering mchs., \$54,630.
Aeme Machinery Co., Cleveland, Ohio, forging machine, \$27,384.
R. G. LeTourneau, Peoria, Ill., tractors, \$19,072.

Bohn Aluminum and Brass Corp., Detroit, Mich., artillery ammunition components, \$117,685.
Delco Products, Div. of General Motors Corp., Dayton, Ohio, ammunition components, \$445,656.
Revere Copper and Brass, Inc., Baltimore, Md., ammunition components, \$34,774.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., fire control equipment, \$263,832.
Hadley Special Tool Co., Inc., Boston, Mass., small arms material, \$19,761.
Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, Ohio, milling machines, \$27,211.
Warner & Swasey Co., Cleveland, Ohio, lathes, turret, \$25,446.
Bolt & Nut Division, Republic Steel Corp., Cleveland, Ohio, bolts and nuts, \$31,607.
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y., nuts, steel, \$19,813.
Walworth Co., New York, N. Y., fittings, pipe, \$37,600.
The Grabler Mfg. Co., Cleveland, Ohio, fittings, pipe, \$41,755.
International Harvester Co., Inc., Washington, D. C., trucks, motor, \$46,584.
Yellow Truck & Coach Mfg. Co., General Motors Truck & Coach Div., Pontiac, Mich., trucks, motor, \$82,056.
Westinghouse Electric & Mfg. Co., Washington, D. C., sets, welding, \$40,000.
General Electric X-Ray Corp., Chicago, Ill., units, X-Ray, dental, \$21,352.
American Steel & Wire Co. of N. J., Washington, D. C., cable, electric, \$40,397.
Baldt Anchor, Chain & Forge Corp., Chester, Pa., chain, anchor, \$53,877.
Spencer Lens Co., Buffalo, N. Y., sights, telescope, \$77,000.
Lidgerwood Mfg. Co., Elizabeth, N. J., winches, \$31,260.
Oliver Iron & Steel Corp., Pittsburgh, Pa., bolts and nuts, \$49,218.
Rockford Machine Tool Co., Rockford, Ill., planer, openside, \$18,774.
The American Brass Co., Waterbury, Conn., tubing, copper-nickel alloy, \$247,471.
Cincinnati Milling Machine & Cincinnati Grinders, Inc., Cincinnati, Ohio, machines, milling, \$57,571.
Smith-Courtney Co., Richmond, Va., grinders, universal, 19,167.
General Electric Co., Schenectady, N. Y., sets, welding, \$22,556.
Scovill Mfg. Co., Waterbury, Conn., tubing, copper-nickel alloy, \$33,568.
Rockbestos Products Corp., New Haven, Conn., cable, electric, \$40,408.
The Electric Products Co., Cleveland, Ohio, panels, welding, \$18,880.
Jones & Laughlin Steel Corp., Pittsburgh, Pa., steel, bar, \$86,281.
Electric Heater Co., Bridgeport, Conn., barrels, steel, \$156,232.



Headquarters
**for HIGH PRESSURE
GAS CYLINDERS**

**HOT DRAWN
FROM
CARBON MANGANESE or
CHROME MOLYBDENUM
STEELS**

*for all gases
and all pressures*
Diameters up to 13"

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OTHER TISCO PRODUCTS
Manganese Steel Castings
Special Trackwork
Alnico Permanent Magnets



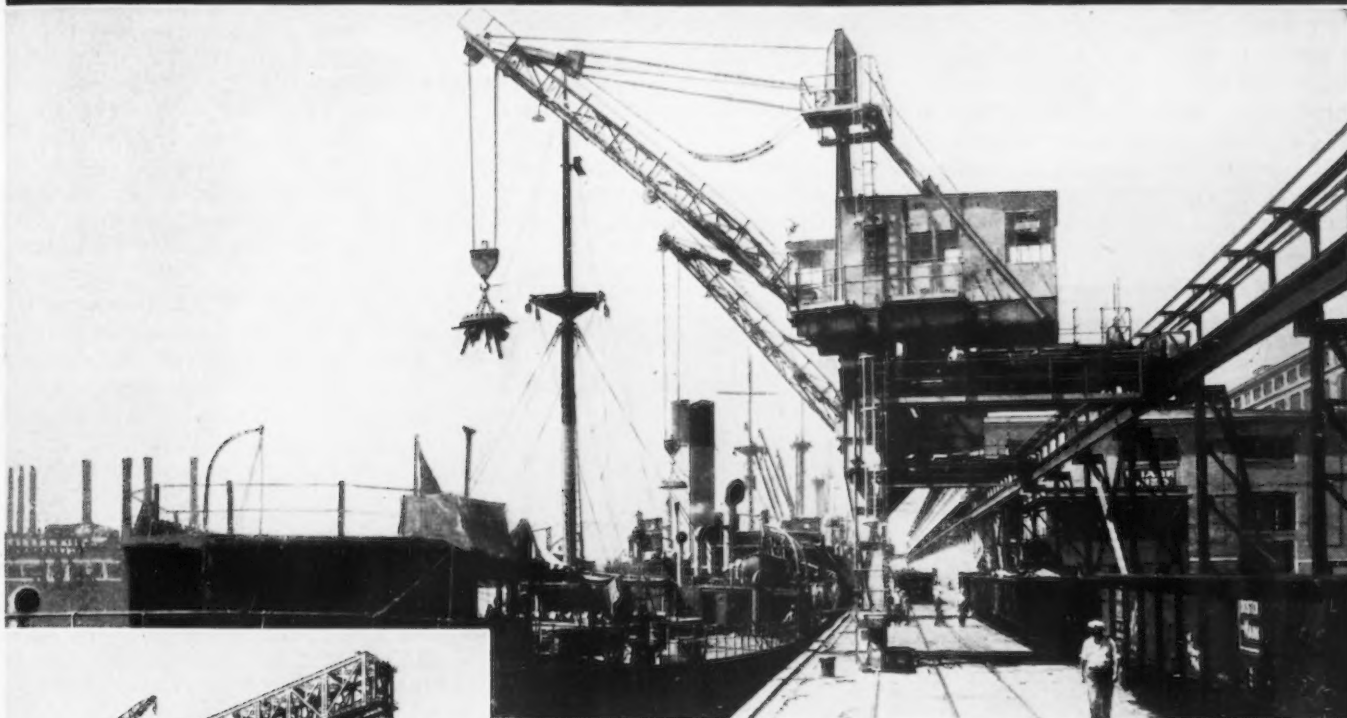
TAYLOR-WHARTON IRON & STEEL COMPANY

HIGH BRIDGE, N. J.

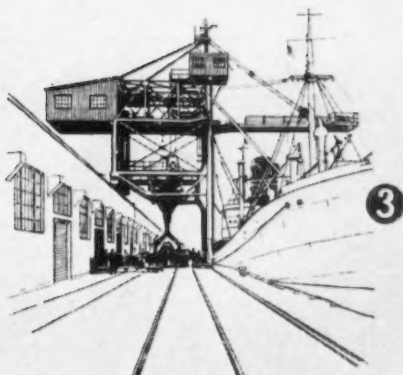
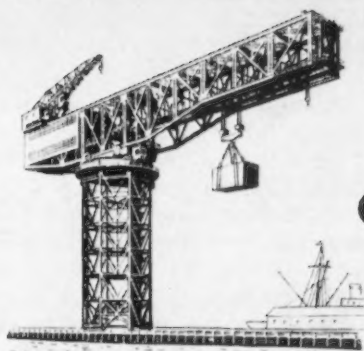
PLANTS AT HIGH BRIDGE, N.J. AND EASTON, PA.

CYLINDER SALES OFFICE . . . 110 EAST 42nd STREET, NEW YORK CITY, N.Y.

MATERIALS HANDLING



Two 6-ton Semi-portal Cargo Cranes.
Designed and Built by Heyl & Patterson.



CRANES

ENGINEERED BY

Heyl & Patterson

Help BUILD SHIPS and SPEED CARGOES

To handle materials—swiftly, surely and economically—is the function of the equipment designed, fabricated and erected by this organization.

Shown above, and at the left, are typical cranes engineered and built by Heyl & Patterson:

1. HAMMERHEAD shipbuilding crane
2. FULL-PORTAL cargo crane
3. SEMI-PORTAL cargo crane

With a background of more than 50 years, Heyl & Patterson is equipped to serve similarly with traveling bridges, loading towers, railroad car dumpers, and other related equipment for the handling of bulk materials.

As engineers, manufacturers and contractors, we are prepared to assume undivided responsibility for jobs such as these—all the way from design to erection.

Let us know of your transfer problem. We can help you to obtain an effective low-cost solution.

HEYL & PATTERSON INC.

50 WATER STREET

PITTSBURGH, PA.

Ordnance Chief to Visit Metal Show

Cleveland

••• Maj. Gen. C. M. Wesson, chief of the Ordnance Department, U. S. Army and Brig. Gen. G. M. Barns, assistant general manager of the division of engineering of the Ordnance Department, will attend the National Metal Congress and Exposition

here Oct. 26, according to an announcement by W. H. Eisenman, managing director. The officers will be guests of honor at a special luncheon in the Union Club and will speak at a dinner sponsored by the Ordnance Association of Northern Ohio and the American Society for Metals. Ordnance manufacturers of northern Ohio are being invited to attend for discussion of problems connected with armament manufacture.

The Metal Congress and Exposition begins here Oct. 21 in Public Auditorium. More than four acres of floor space will be occupied by the show. Extensive technical programs of the American Society for Metals, the American Welding Society, the Wire Association and the Iron and Steel Division and the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers will be held in conjunction with the show.

Gen. Hugh S. Johnson will speak at the annual banquet of the American Society for Metals in Hotel Statler, Thursday night, Oct. 24. Principal speaker at the annual banquet of the A.I.M.E. will be R. C. Allen, vice-president of Oglebay, Norton Co., Cleveland, and president of the Lake Superior Iron Ore Association, who is now working in Washington as a member of the Advisory Council to the National Defense Commission. Mr. Allen will touch upon problems related to the procurement of strategic minerals.

Headquarters of the American Society for Metals will be located at Hotel Statler. The morning technical sessions of A.S.M. will take place at Hotel Statler. Afternoon and evening meetings will be conducted in the spacious Public Auditorium.

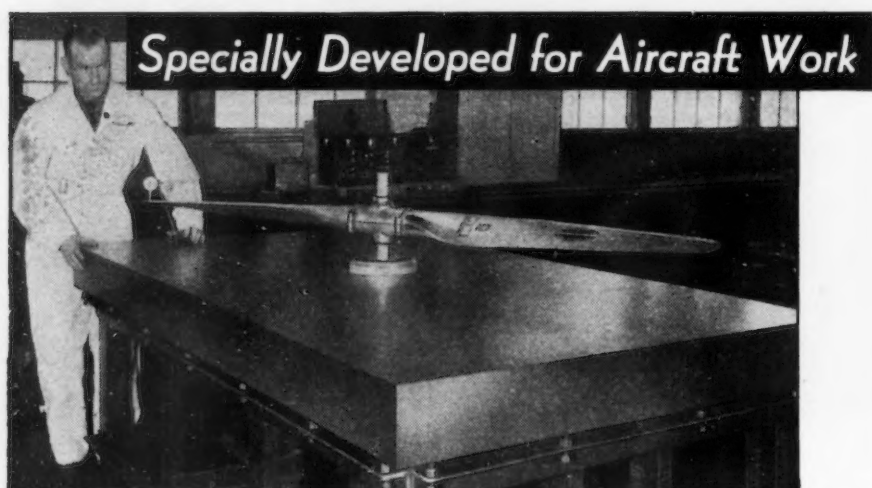
Hotel Carter has been named headquarters for The Wire Association. The banquet has been scheduled for Wednesday evening, Oct. 23, at Hotel Carter.

The American Welding Society and the Institute of Metals and Iron and Steel divisions of the American Institute of Mining and Metallurgical Engineers will be located at Hotel Cleveland. The banquet of the latter group will be held at the Cleveland on Tuesday evening, Oct. 22. The Welding Society has scheduled its banquet for Thursday evening, Oct. 24 at the same hotel.

Austin Co. Expands Engineering Space

Cleveland

••• The Austin Co. here will add 9000 sq. ft. to its engineering and office space at Euclid Avenue and Noble Road. The new structure will make use of fluorescent lighting throughout.



CHALLENGE Semi-Steel LAYOUT SURFACE PLATE

● This smooth, accurate surface is essential equipment for inspecting, assembling, or checking plane and motor parts, instruments, small assembly units, special streamlining devices, etc. Also used for many light machining operations.

Made of the finest iron and steel, planed perfectly smooth and square, the Challenge Semi-Steel Layout Surface Plate is accurate, rigid, and

durable. It is available with or without the strong, reinforced, arc-welded, all-steel frame which is provided with 32 lock leveling screws for quick, dependable adjustment.

Challenge Surface Plates are made in one standard size: 48x96 inches; special sizes on order. T-slot grooving, scoring, and machining for special purposes are available.

CHALLENGE Semi-Steel LAPPING PLATE



● Made of finest semi-steel, specially heat-treated and carefully machined, in sizes ranging from 8x8 to 54x144 inches... Write today for specific details on Challenge equipment for the aircraft industries; also general machinery catalog.

● Joints required to hold oil can be properly lapped with ease and precision by using a Challenge Lapping Plate. It is specifically designed to assure a perfect fit when lapping in metal to metal joints on which no gaskets, shellac, or sealer of any kind is used. This plate has 1/16-inch grooves, spaced 1/2-inch apart, running the full length and width of the dependably accurate surface. Sold with or without arc-welded, all-steel stand.

THE CHALLENGE MACHINERY COMPANY

GRAND HAVEN, MICHIGAN

CHICAGO,
17-19 E. Hubbard Street



NEW YORK,
50 Church Street



ARISTOLOY STEELS

*All ARISTOLOY executives are
located at the plant—for quicker action and closer
cooperation on your alloy steel requirements*

WE TALK IT OVER ACROSS THE DESK . . . NOT ACROSS THE COUNTRY

All Aristoloy Executives and Department Heads have their working headquarters where Aristoloy Steels are made—at our Warren, Ohio plant. Talking it over across the desk, there's an easy, every-day interchange of information and experience. Centralized organization makes for closer cooperation, with less chance for error, delay, and misunderstanding. Aristoloy steel makers make steel *on the job*—not by remote control.

COPPERWELD STEEL COMPANY, WARREN, OHIO

ARISTOLOY S.A.E. ALLOY BILLETS AND BARS, AIRCRAFT QUALITY
STEELS, OXIDATION AND CORROSION RESISTING
STEELS, TOOL AND SPECIAL STEELS, STAINLESS STEELS

Visit us at the
METAL SHOW

October 21-25, 1940

CLEVELAND, O.

Stop at our Aristoloy
Exhibit—Booth F-20—
and play "Aristoloy".
You can't lose.

Prizes for high scores

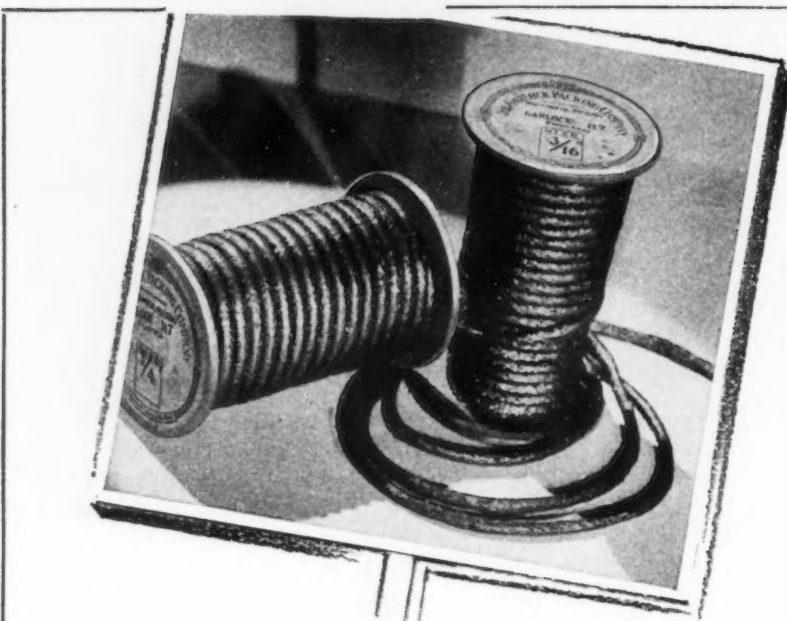
Separation of G-M And GMAC Ordered

Washington

••• Alleging violation of the anti-trust laws and seeking to divest General Motors Corp., of all ownership and control of General Motors Acceptance Corp., the Department of Justice announced on

Oct. 4 the filing of a civil action in the Federal District Court in the Northern District of Illinois in another phase of the government's anti-trust litigation against major automobile companies.

Separate indictments under the Sherman Act were returned in May, 1938, against General Motors, Ford and Chrysler companies and under civil decrees agreed upon in



INDUSTRY VOTES FOR GARLOCK 117

For Satisfying, Dependable Service

If there were elections to pick the valve stem packing that should be used—voting would be little more than a formality, because most engineers and maintenance men have learned from experience that GARLOCK 117 does the job right.

GARLOCK 117 is used on stems of globe and angle valves operating against high-pressure steam, hot or cold water, or oil. Furnished either braided or twisted in sizes from 1/16" up.

**THE GARLOCK
PACKING CO.**
Palmyra, New York

In Canada:
The Garlock Packing
Company of Canada
Ltd., Montreal, Que.



G-E Official Sees Vast Arms Output in 1941

••• American industry can "enormously exceed" output in the totalitarian countries once orders are placed and plants are tooled up. Charles E. Wilson, president of General Electric Co., declared last week at the World's Fair in announcing G-E plans for a \$50,000,000 expansion program for national defense.

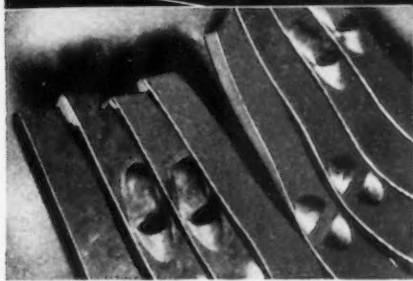
"You won't see anything great this year but after that the output will be enormous," Mr. Wilson said. Philip D. Reed, General Electric chairman, declared that "we (the U. S.) are not building armaments for fun. We're building them to match conditions abroad, and the only thing that would stop it would be the collapse of Germany." Mr. Reed told a large crowd of G-E employees, visiting the Fair in a body, that the "willing co-operation" of American labor could beat the "forced work" of the factory hands in any dictatorship.

November, 1938, the latter two divested themselves of all interest in their affiliated finance companies. Indictments against them were, therefore, nolle prossed.

The consent decrees contained an escape clause which provided that Ford and Chrysler companies might acquire an interest in an automobile finance company if the government failed in a civil action to divorce General Motors and its affiliate. The action just taken seeks such a result.

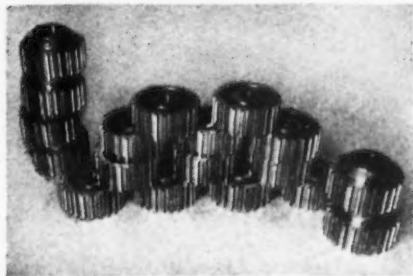
Hewitt Rubber Corp. Holds Celebration

Celebrating completion of a plant wide expansion and improvement program, Hewitt Rubber Corp., Buffalo, held "open house" on Sept. 28, for its employees and their families. Service pins were given to 54 factory and office workers. Formal dedication of the new building was made by Thomas Robins, Jr., president, with unveiling of a bronze plaque on the second floor designating the name of the new building as "The Twombly Building," in honor of Mr. Earle K. Twombly, vice-president in charge of manufacturing.



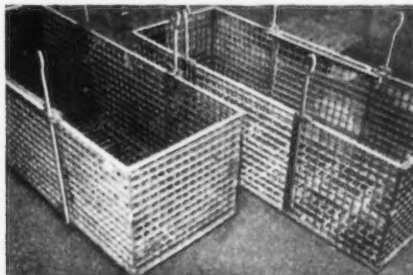
FORMING DIES . . .

— where AMPCO METAL'S hardness, its resistance to pining, wear and impact result in exceptional accuracy and long life.



GEARS . . .

The toughness and wear resistance typical of AMPCO METAL recommends it for all types of gears, ranging from a fraction of a pound to hundreds of pounds each.



PICKLING EQUIPMENT . . .

AMPCO METAL'S great resistance to corrosion makes it widely used in this type of service, and wherever else corrosion is a problem.



BEARINGS . . .

AMPCO METAL is probably more widely used for bearing service than any other bronze. It is noted for its stubborn resistance to wear, "squashing out" and shock loads.

Like *Protective Hands* for a SAFE LANDING!

A critical moment — as plane and ground meet. If vagaries of wind and timing make the meeting a rough one, the landing gear must safely absorb severe impact.

At points of greatest stress and shock in the landing gear of plane after plane, AMPCO METAL is used . . . undeniable proof of the greater strength and longer wearing qualities of this dependable bronze.

SPECIFIED for the "TOUGH" JOBS

In other industries, as in aviation, you'll find AMPCO METAL widely used wherever exceptional durability and resistance to impact, fatigue, wear and corrosion are required. It enjoys a unique reputation as "the metal that makes good when all others fail."

Have You a Problem of "Metal Failure"?

Maybe AMPCO METAL can master a troublesome job for you. It's made in many grades and forms. Tell our engineering staff what you're up against, and they'll be glad to supply complete data and recommendations. There's no obligation. Write

AMPCO METAL, INC., Dept. IR-1010, Milwaukee, Wisconsin

At the National Metal Show . . . AMPCO SPACE Y-26

AMPCO METAL



The Metal Without An Equal

Canada Sees a Long War, and Will Be Vital Factor by Spring

••• After more than a year of the war the Dominion of Canada still has not attained quantity production of airplanes, guns, shells and other matériel, but she is now making rapid strides in all depart-

ments of war preparations and is giving aid to Great Britain in various other ways that are of great value in the prosecution of the war.

Canada's progress in some di-

rections has been slow because of the fact that, except for her airplane and air training program, she got a late start—many months, in fact, elapsed after the outbreak of the war before Great Britain looked to the Dominion for important aid in the manufacture of guns, shells, etc.

Besides getting a late start, Canada's war efforts have been hampered by conditions beyond her control. The shortage of airplane engines, for which she must largely depend on the United States, has delayed the airplane program, though it is promised that by spring airplanes, completely equipped with air and ground crews, will be going to Britain by the hundreds a month.

Manufacture of other implements of war has attained less speed than was hoped for, but in this effort Canada has been handicapped by shortage of machine tools, for which she also must depend on the United States.

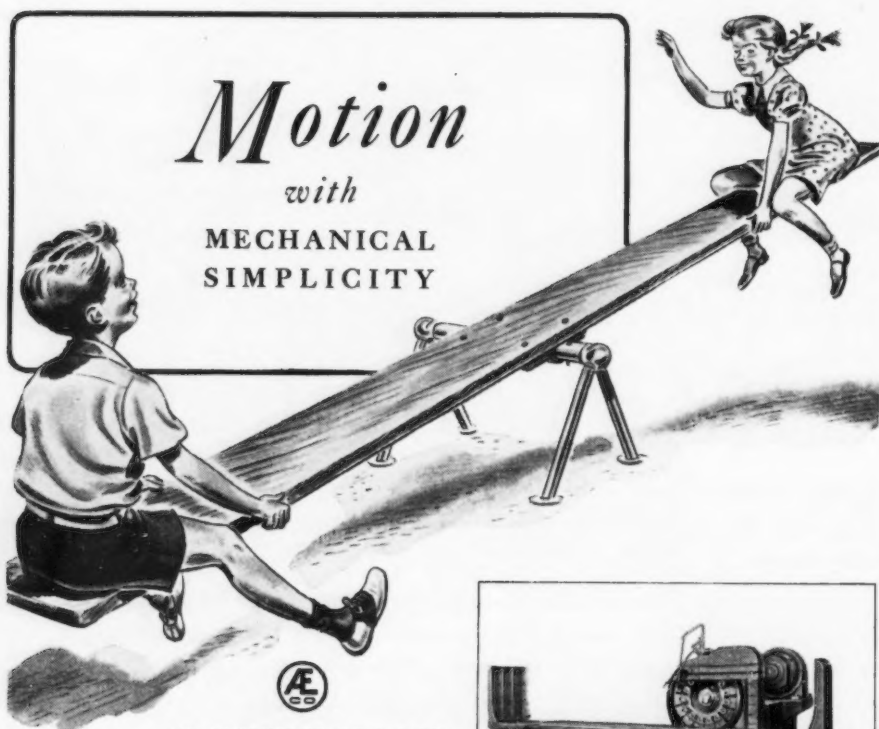
These and many other interesting facts regarding Canada's war program were revealed by Dominion government officials to a group of business paper editors, who had an unusual opportunity to take a look behind the scenes through a series of informal conferences at Ottawa lasting two days.

Greeted first by Prime Minister Mackenzie King, the editors listened to frank and open discussions of many phases of Canada's wartime efforts and wartime problems. Questions were answered almost without reservation. There was apparently no attempt to make the picture look better than it is, nor on the other hand was there any evidence of gloom or discouragement.

To understand and evaluate the contribution of Canada to the war, present and prospective, one must talk with the Canadian people. There is a unity of strength and purpose that becomes more and more apparent to the visitor as he talks with persons in various walks of life, all of whom are determined upon the prosecution of the war to a successful conclusion. The thought that the British Em-

By C. E. WRIGHT

Managing Editor, *The Iron Age*

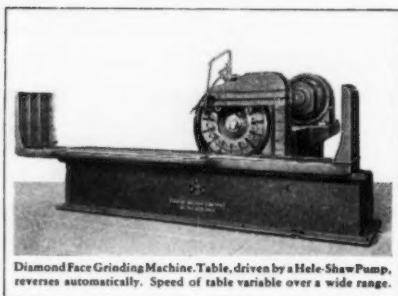


AN ADVANTAGE OF A-E-CO
HELE-SHAW FLUID POWER

THERE are many good ways of driving machines, but we believe you'll welcome Hele-Shaw Fluid Power first of all for its mechanical simplicity.

Fluid Power (oil under pressure for driving machines) is conveyed from its source—a Hele-Shaw Pump—to the driven machine simply by pipes and valves. Therefore, it does not matter whether you mount the Hele-Shaw Pump on or off the machine, close to it or remote from it.

Uncomplicated itself, Fluid Power also usually eliminates the necessity for com-



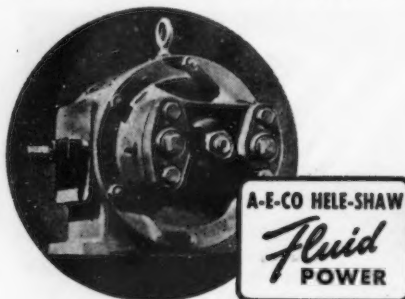
Diamond Face Grinding Machine Table, driven by a Hele-Shaw Pump, reverses automatically. Speed of table variable over a wide range.

plicated controls. Variations in speed and pressure are obtained precisely by a lever, handwheel or simple electrical control.

You want all these advantages. You get even more—dependable performance, low maintenance, brute force, if you need it—3000 lbs. per square inch . . . ability to complete a cycle of operations manually or automatically, freedom from lubrication problems, and many others.

See for yourself how you can use Hele-Shaw Fluid Power to your own benefit and for the benefit of your customers.

Before you design, build or buy, tell us what your problems are. Let our experienced staff help you.



A-E-CO HELE-SHAW
**Fluid
POWER**

AMERICAN ENGINEERING COMPANY

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Other A-E-CO Products: Lo-Hed Hoists, Taylor Stokers, Marine Deck Auxiliaries.



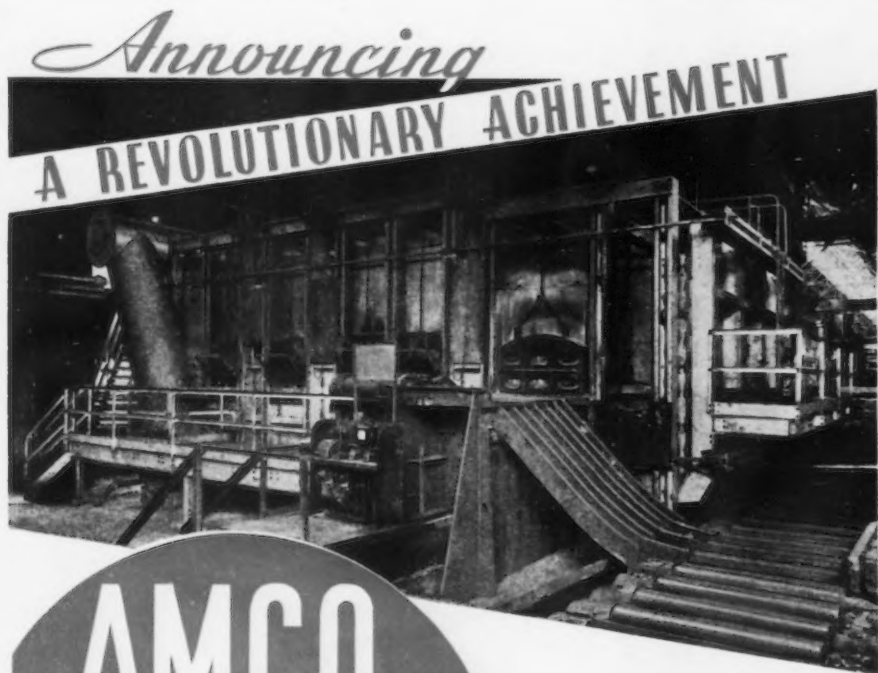
J. L. RALSTON, Minister of Defense of Canada, who left for England to discuss war plans a few days after addressing the National Conference of Business Paper Editors of the United States at a meeting last week in Ottawa.

pire can possibly lose the war is not even countenanced. This unity is all the more remarkable when it is realized that three million of Canada's eleven million inhabitants are French Canadians, whose pacifist tendencies were considered a likely problem when the war broke out. Today French Canadians are "doing their bit" with the same readiness as other Canadians.

No longer do Canadians resent the fact that the United States is

not in the war. They freely express their gratitude for the aid that the United States has given, which they hope and expect will be continued and increased as the needs arise. American industry is highly praised for its helpful co-operation. The United States government is commended for its aid in furnishing destroyers and other implements of war. American

pilots are joining the Canadian air forces by the hundreds both as instructors and ferry pilots to fly airplanes to England. Canadians have a watchful eye on our Presidential election, but they are reassured by the knowledge that all possible aid to Canada and to Great Britain will continue to be given by the American government regardless of the outcome of the



AMCO

Cold-End-Fired

CONTINUOUS HEATING FURNACE

... The greatest advance in slab and billet heating practice in a generation!

Greatly increased production.

More Uniform Heating.

Eliminates Washing.

Permits use of high air pre-heat temperatures without alloy hot fans.

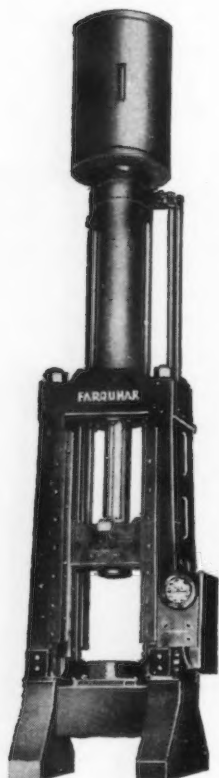
AMCO PIT FURNACES
ANNEALING FURNACES
ROTARY HEARTH FURNACES
FORGING FURNACES
PULVERIZED COAL SYSTEMS



The **AMSLER-MORTON COMPANY**
FULTON BUILDING • PITTSBURGH, PA.

FARQUHAR HYDRAULIC PRESSES

For Faster Production



150-ton high-speed deep-drawing press for cartridge cases. 60-inch stroke. Push button control and selector switch for inching, semi-automatic or automatic operation. Self-contained pump unit. 220 gallons capacity. Driven by 250 HP motor.

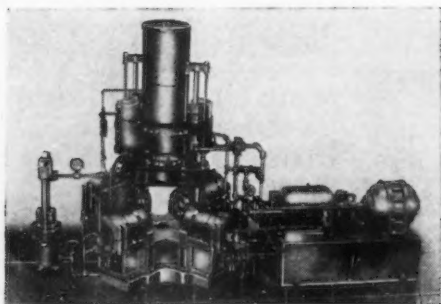
Farquhar Hydraulic Presses, as well as the Farquhar organization, are keeping pace with the increased industrial activity demanded for national defense.

In scores of industries Farquhar high-speed presses are already at work—increasing production, reducing costs. Farquhar engineers are trained to help you design the *right* press for your requirements.

A. B. FARQUHAR CO., LTD.
402 Duke St. York, Penna.

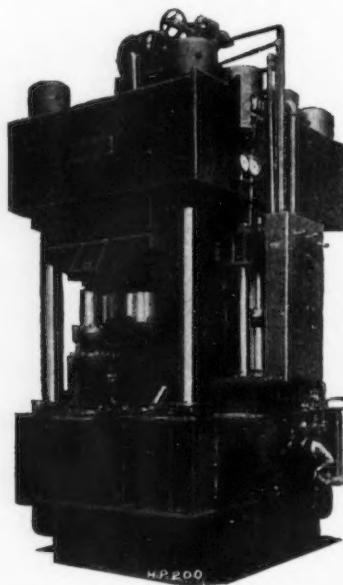


550-ton Horizontal Finishing press for manufacturing smokeless powder. Farquhar builds a complete line of presses for this purpose.



1200-ton Forging and Piercing press—built to meet special requirements.

4000-ton press for forming operation.



election. It seems to be the belief of many thinking people in Canada that the entry of the United States into the war, if that should happen, will be forced by events in Europe and the Far East.

Canada expects a longer war than is generally contemplated by people of the United States. It is thinking and planning in terms of a war that will extend at least into 1942 and perhaps into 1943. It sees as one outcome of this war a closer union than has ever existed before between Great Britain, Canada and the United States—the English speaking peoples. A much closer union with the United States is believed to be inevitable.

Canadian Employment At a 20-Year Peak

... Employment in Canadian industry on Sept. 1 reached the highest point in the last 20 years, according to a report by the Dominion Bureau of Statistics. The 12,247 firms reporting to the bureau on Sept. 1 had a payroll of 1,289,385 men and women, an increase of 36,168 or 2.9 per cent over Aug. 1. On Sept. 1 last year, 11,856 firms employed 1,165,631 workers, an increase of 1.8 per cent over Aug. 1, 1939.

An analysis of returns by industries showed unusually marked expansion in manufacturing plants, which increased their staffs by more than 20,800 persons. The greatest improvement took place in the iron and steel industries, which absorbed 5700 more workers.

With no loss of affection for what is still called the "Mother Country," Canadians seem to believe that their joint interest with the United States in the defense of this continent is but the beginning of a closer relationship that will grow in many directions.

What the immediate future holds in store for either country is anyone's guess, but it was frankly stated by one prominent Canadian government official that the next few weeks may be the most crucial of the war in determining its future course, including the question of whether the United States goes in or stays out. Events as they are being shaped by the Axis powers—Germany, Italy and Japan—may decide the issue as it primarily affects the

United States—such, at least, was the impression given.

The Canadian government officials who discussed the war and Canadian efforts to do its part included the following: Leonard W. Brockington, special assistant to the Prime Minister and counsellor to the War Committee of the Cabinet; J. L. Ralston, Minister of National Defense; Angus L. Macdonald, Minister of Naval Services; James S. Duncan, Acting Deputy Minister for Air; C. D. Howe, Minister of Munitions and Supply; J. L. Ilsley, Minister of Finance; J. A. McKinnon, Minister of Trade and Commerce; L. D. Wilgress, Deputy Minister of Trade and Commerce; Hector B. McKinnon, chairman of Wartime Prices and Trade Board; W. C. Clark, Deputy Minister of Finance; G. K. Shiels, Deputy Minister of Munitions and Supply; Alec D. McBain, Foreign Exchange Control Board; Donald Gordon, Deputy Governor of the Bank of Canada; D. Leo Dolan, chief of the Canadian Travel Bureau; Prof. W. A. Mackintosh, economist and special assistant to the Deputy Minister of Finance. A welcoming talk was made by J. Pierrepont Moffat, American minister to Canada, who was also host to the business paper editors at the American Legation.

The \$600,000,000 Commonwealth Air Training Plan, which is Canada's largest contribution to the war, is now making rapid progress after the inevitable lags and delays, which had to be repeatedly explained to the Canadian public, which at first could not understand why effective help to the British was not furnished much more quickly. The progress which has been made was explained in figures which revealed that at the outbreak of the war Canada had in her air forces only 450 officers and 2000 men whereas today there are 2500 officers, 23,000 men and a civilian force of 2500. One of the greatest setbacks was the decision reached last June that no longer could England supply planes and pilots to assist in the Canadian training program because of the need for these to protect England. At that time contracts were placed in the United States for larger quantities of planes and engines, some new, some second hand. "We took whatever we could get," was one explanation.

Planes are being manufactured

WORTHINGTON



THROUGH peace and war, prosperity and depression, Worthington has forged ahead, developing new products, improving its current lines, meeting essential needs . . . always guided by the initiative of men eager to multiply industry's effectiveness.

Today Worthington is prepared . . . with five well equipped plants, a line of thoroughly modernized products covering many basic and secondary industrial functions, a staff of eminently qualified engineers, and a manufacturing organization capable of meeting greatly increased demands.

Here is one of the country's important producing units, ready to do its share of the job that lies ahead.



WORTHINGTON PRODUCTS FOR MANUFACTURING, PROCESS AND MARINE SERVICES

AIR CONDITIONING EQUIPMENT	CENTRIFUGAL PUMPS FOR EVERY USE
REFRIGERATION AND	TURBINE WELL PUMPS
ICE PLANT EQUIPMENT	ROTARY PUMPS
STEAM TURBINES	POWER PUMPS
STEAM CONDENSERS	STEAM PUMPS
STEAM-JET EJECTORS	SUMP PUMPS
VACUUM PUMPS	AIR COMPRESSORS
FEEDWATER HEATERS	GAS COMPRESSORS
PRESSURE FILTERS	LIQUID METERS
GAS ENGINES	MULTI-V-BELT DRIVES
DIESEL ENGINES	SPEED CHANGE GEARS
CONVERTIBLE GAS-DIESEL ENGINES	CONTRACTORS AIR TOOLS
	PORTABLE AIR COMPRESSORS

WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: HARRISON, NEW JERSEY District Offices and Representatives in Principal Cities

in Canada, but no engines. Though a Canadian airplane engine plant is now under consideration, the difficulty of carrying this project through is recognized. The shortage of machine tools, technicians and skilled workers may not be insurmountable obstacles, but they are formidable. Meanwhile, Britain has been able to some extent to renew shipments of planes, engines, etc., and the Canadian pro-

gram is thus now being carried on as originally planned.

Over 2000 buildings have been erected in various parts of Canada for the training of men, housing of planes, etc. All of the aerodromes included in the program will have been completed by winter. The program has been expanded to the extent that \$35,000,000 worth of orders have been placed in Canada over the amount

provided for in the plan as originally contemplated. By July, 1941, the number of trainees will have exceeded by 25 per cent the number that had been expected by that time. By the end of the year 48 air training schools will be in operation against the 36 that the plan had called for by that time. By spring several hundred pilots will be turned out each month and it is confidently expected that an equal number of complete planes, with engines, will be available, so that early next year Canada will make a formidable contribution to the fight in the air over Europe. An organization of ferry pilots has been formed to take planes to England. The majority of these pilots are Americans who have had flying experience.

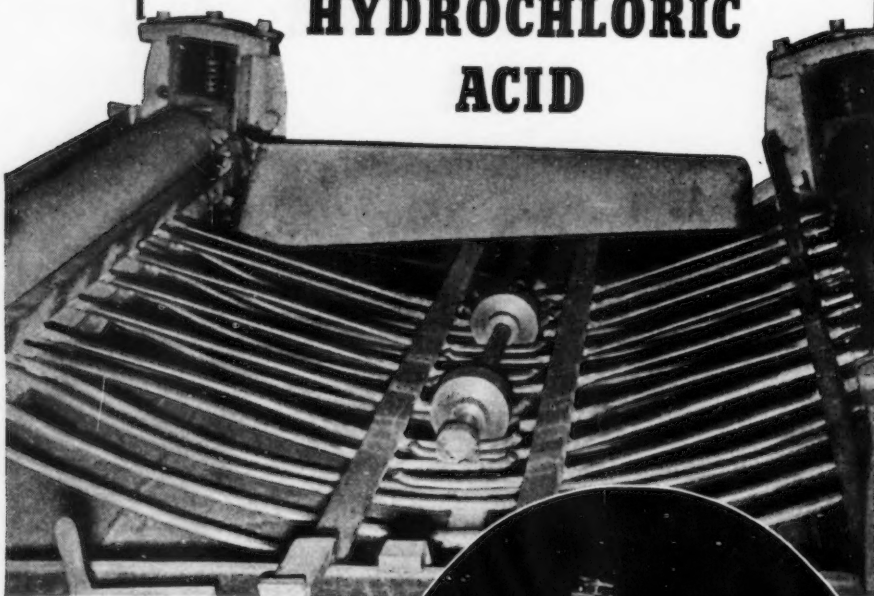
It was stated that airplane production for England in the United States is steadily increasing. In her attempts to increase the supply of airplanes, Canada is acting on the conviction that the quickest way to get planes to England is not to do anything that would interfere with manufacture in the United States. This factor is given consideration in connection with the contemplated Canadian engine plant. If such a Canadian plant were to draw machine tools and technicians away from American plants, the results in the long run would not advance the total supply of planes available to the British.

Armament for aircraft is being supplied partly by United States manufacturers, partly by Great Britain and to some extent by Canadian manufacturers.

Except for the Bren machine gun, contracts for which were awarded before the outbreak of war, Canada has not attained quantity production of armament. In the manufacture of guns the Dominion started practically from zero after the war started. However, plants are now being tooled up for the production of almost every type of gun that the British forces are using, including airplane and tank types, anti-aircraft guns and a complete range of naval guns. By the latter part of 1941 there will be production on a quantity basis of all of these guns. Canada's experience, it was stated, is that the larger the gun to be manufactured the longer it takes to get into production. In the case

Monel at work in—

HYDROCHLORIC ACID

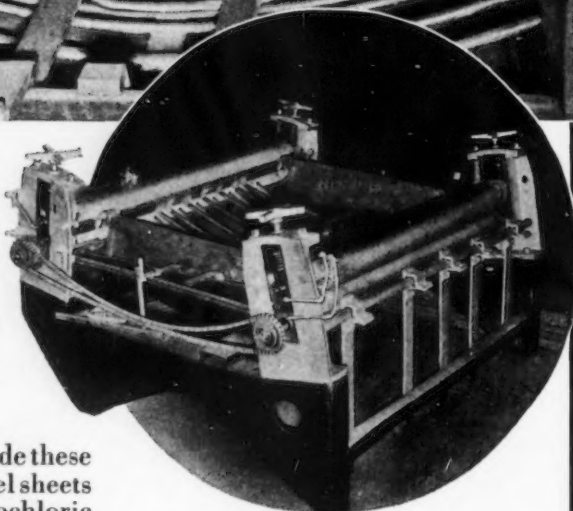


Monel is widely used in picklehouse equipment for its strength, toughness and ease of fabrication. Monel is also first choice because of its sustained resistance to hydrochloric, hydrofluoric and sulfuric acids.

The Wean Engineering Co., Warren, Ohio, made these bars of Monel to guide steel sheets through a bath of hydrochloric acid. In Wean's galvanizing line, the guides, pictured above, must withstand wear as well as the corrosive hydrochloric bath.

**THE INTERNATIONAL NICKEL
COMPANY, INC.**

67 WALL STREET NEW YORK, N. Y.



SPECIAL EQUIPMENT READILY FABRICATED

Corrosion-resistant Monel is widely used because it is so easily fabricated, so readily cut, shaped and welded into any needed designs. Here is another view of the Wean-built acid wringer using Monel guide bars. A helpful folder, "Equipment Designs for the Pickle House", is yours for the asking.



"Monel" is a registered trade-mark of The International Nickel Company, Inc., which is applied to a nickel alloy containing approximately two-thirds nickel and one-third copper.

MONEL

Interests of Canada, U. S. Found Parallel

• • • "Cooperation between Canada and the United States has become a matter of vital importance to every man, woman and child from the Arctic Circle to the Rio Grande," said Paul Wootton, of Washington, chairman of the National Conference of Business Paper Editors of the United States in addressing a Canadian audience last week in a radio hookup from Ottawa. "The two countries," he added, "have the most compelling incentive to work closely together so that democracy shall not perish from the earth. Canada in its own interest cannot afford to have the United States invaded and the United States cannot allow an invasion of Canada."

of field guns, for example, the original time schedule from the letting of the contract to volume production was estimated at two years, but it was said that this may now be reduced to 15 or 16 months.

Every component of explosives is now being made or is about to be made in Canada. Fourteen plants are making ammunition, small arms manufacture has been multiplied by six, chemical plants to supply the necessary chemicals for explosives are being built, \$40,000,000 is being expended to step up the manufacture of aluminum for airplanes and many other programs are being carried out to supply the necessary materials that cannot be obtained elsewhere. The ultimate aim of the ammunition program is one billion rounds per year.

With Canada's limited industrial resources needed for her war effort, it has been necessary for the Department of Munitions and Supply to establish controls over essential commodities. Steel is one of the prime essentials. Having an annual ingot producing capacity of only 2,300,000 gross tons, Canada is finding it necessary to take increasing quantities from the United States. Yet Canadian steel mills are in almost all departments operating on a basis of 18 8-hr. turns a week, and in some instances 19 turns. The supply of raw steel is being augmented by the importation of scrap from the

United States and it may be necessary to import basic pig iron, of which there is an impending shortage.

It has been found necessary to establish a priority system in steel and other materials. Non-essential uses of aluminum have been curbed in the interest of defense activities. No. 1 priority in steel

is for shells, No. 2 is for building of war plants.

In all of its planning for war Canada is working through the British Purchasing Commission, which has close relations with the United States government and with United States industry. It was emphasized time and time again in the discussions that Brit-

STAMPINGS

Range: Regular and special stampings from material up to 1/2" thickness. Deep drawn metal work of satisfying accuracy.

Reliability: 25 years of successful experience. Serving both large and small users in YOUR industry daily.

Resources: A complete plant including most modern stamping machinery associate equipment for spot-welding, enamelling, tapping, and etc. We manufacture our own dies.

The advertisement features a collection of various stamped metal parts, including gears, flanges, brackets, and bolts, arranged in a grid-like fashion. Each category is labeled with a banner across the top of its respective section:

- ON ELECTRICAL EQUIPMENT**: Shows components like electrical boxes and connectors.
- ON DOMESTIC APPLIANCES**: Shows parts like stove burners and sink drains.
- ON THE TRUCK AND THE AUTOMOBILE**: Shows automotive parts like wheels, flanges, and brackets.
- ON INDUSTRIAL EQUIPMENT**: Shows heavy-duty parts like large flanges and structural brackets.
- ON FARM IMPLEMENTS**: Shows agricultural parts like a large curved blade and various bolts.

LANSING STAMPING COMPANY
SO. PENN. AVENUE, LANSING, MICHIGAN

P&H CRAWLER CRANES

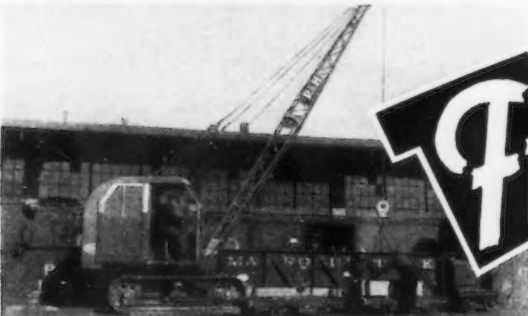
WORK ALL OVER THE YARD



● The speed and mobility of P&H Crawler Cranes, and the flexibility of their service, are making these machines as valuable to industry as P&H Overhead Electric Cranes.

SCRAP

● P&H Crawler Crane handling scrap with magnet. Machine is easily and quickly converted for hook, sling or clamshell service.



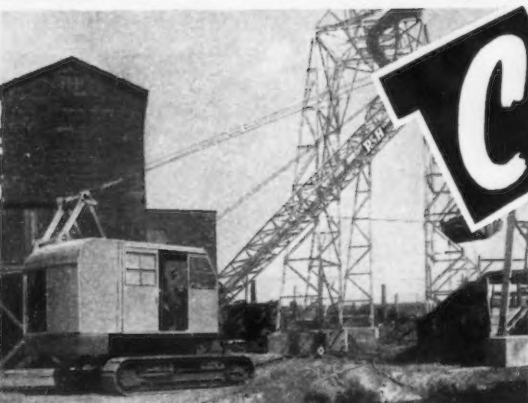
FREIGHT

● Loading and unloading gondolas—jobs are speeded up by the easy maneuvering of a P&H.



SHEETS

● Handling raw or finished materials. Smooth control permits accurate placing, stacking, etc.



COAL

● Unloading and transferring coal is done more efficiently when a fast-working P&H gets the assignment.

● P&H Crawler Cranes are built in a wide range of sizes and lifting capacities. If you have a yard or warehouse handling problem, write to us!

General Offices: 4401 West National Avenue, Milwaukee, Wisconsin

HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS **P&H** HOISTS • WELDING ELECTRODES • MOTORS

ain and Canada regard the United States as a full partner in its industrial effort to win the war even though the United States technically remains a neutral.

For her own defense and to assist the British in convoying ships it has been necessary for Canada to build a navy. This is not a navy of big ships (the largest of the 100 or so that are now being built is 190 ft.) but they are useful ships in harbor patrol and convoying. When the war broke out Canada's navy was hardly worthy of the name. It consisted of only 13 vessels and 1700 officers and men, but it has since been augmented

Canadian Steel Mills Selling into Next Year

Toronto

● ● ● Canadian mills are closing contracts for delivery on some materials throughout first quarter of next year, but are not making definite price commitments. Pig iron booking is proceeding for last quarter and, while a number of the larger melters have covered, others have still to make known their requirements and business closed and inquiries indicate that last quarter commitments will exceed those of earlier quarters this year.

by construction and purchase to 130 ships, which are manned by crews totaling 11,000. The 100 ships now being built will be completed within the next year and navy personnel will be recruited to a total strength of 20,000 or more men. The functions of the Canadian Navy are to assist in the defense of Britain, to assist in convoying ships and to defend Canada under the joint defense scheme with the cooperation of the United States Navy.

Since the beginning of the war the Canadian Navy has assisted in the convoying of 17,000,000 tons of cargo in 3000 or more ships from the United States and Canada to England. Of these, only about 15 have been sent to the bottom by submarines or commerce raiders. No submarines have been seen in Canadian waters despite the fact that the 11,000-mile cruising range of modern submarines would make such a feat possible.

Canadian shipyards are operating at capacity. No destroyers are being built (although Canada is in need of them) because of the technical difficulties involved.

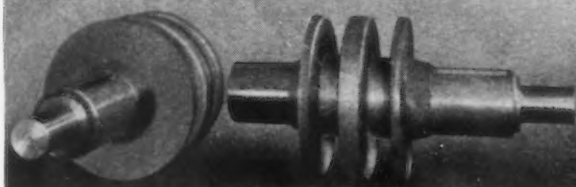
Canada's army is being recruited in a somewhat different manner from that adopted in the United States. Instead of a one-year period of training for conscripts there is only 30 days of training. This method has been criticized in Canada as being too short a period for adequate training, but the government answer to this is that with such a plan a larger number will have received preliminary training over a one-year period (relative to population) than would be possible if the training period were longer. The Canadian conscription act provides that none of the conscripts shall be required to serve outside the Dominion. But there is another branch of the service, known as the Canadian Active Service Force (comparable to our National Guard), which may be sent on overseas service. As new regiments of this active service branch are recruited, volunteers from among the trainees are asked for. The volunteers then become eligible for overseas service.

Under this system there is no public recruiting, no bands to stir up patriotic enthusiasm—none of the panoply of war which accompanied the conflict a quarter of a century ago. The training act provides for conscripting a force of 30,000 men each month. Thus at the end of a year 360,000 will have received at least rudimentary military instruction. The 30-day course is intensive, with results that are said to be apparent in as short a time as 15 days.

When war was declared Canada had an army of only 4500 men. Today there is a total of about 155,000 to 160,000 in active service, of which more than 50,000 are in England and more than 100,000 in Canada. Camps for trainees will be opened on Oct. 9. Thirty-nine of these camps have been built.

Exemption from service in the training forces in Canada depends largely on the request of the employer. If a conscript is in essential work in industry or elsewhere, exemption is readily granted upon application by the employer. As the training period is so short and as many employees are given leaves of absence with pay, the

Forged carbon steel sprocket shaft produced by Standard. Diameter 2' 11"; length 5' 11 1/4"; weight 5160 pounds.



Cast steel runner supplied by Standard Steel Works for an I.P. Morris Hydraulic Turbine.



LET *Standard* HELP WITH YOUR STEEL FORGING AND CASTING PROBLEMS

If your productive capacity calls for a dependable source of supply for steel forgings and castings of unusual design—try Standard.

Good steel, long experience and close control of every step in manufacture, from open-hearth to finished product, assure the satisfactory quality of Standard's forgings and castings.

Won't you discuss your requirements with us and let us advise you how Standard can help?

CASTINGS • FORGINGS • WELDLESS RINGS • WROUGHT STEEL WHEELS

STANDARD STEEL WORKS

Division of THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA



"WITHSTANDS ACTION OF ALL SOLUTIONS"

says satisfied
user of

**UNICHROME*
RACK COATING-W**

Satisfied users of "Unichrome" Rack-Coating W* continue to write in praise of this new, superior rack insulating material. Letters like this one:

"The plating rack withstood the action of all solutions so well that we would like you to come here and discuss its ('Unichrome' Rack-Coating W*) further use with us."

Or this one:

"Unichrome Rack-Coating W* is standing up after eleven months in both the bright nickel and chromium solutions."

Why are users so enthusiastic about "Unichrome" Rack-Coating W*? Because of its unequalled combination of advantages:—

1. Withstands boiling cleaners and all plating solutions.
2. Tough—withstands wear and tear of handling.
3. Contains no ingredients harmful to plating solutions.
4. Cuts costs—reduces frequency of re-coatings.
5. Easy to apply—"dip and force dry" method.
6. Light in color—easy to see how well the rack is covered.
7. Any part of rack can be recoated without recoating entire rack.

Write for Bulletin 15
Containing Complete Information

Platers without rack coating facilities may have their racks coated with "Unichrome" Rack-Coating W* by Chromium Corporation of America, 4645 West Chicago Avenue, Chicago, Ill.; Belke Manufacturing Company, 947 North Cicero Avenue, Chicago, Ill.; or Lea Manufacturing Co., of Waterbury, Conn.

UNITED CHROMIUM INCORPORATED

51 East 42nd Street, New York, N. Y.
2751 E. Jefferson Ave., Detroit, Mich.
Waterbury, Conn.

*Trade Mark
Reg. U. S. Pat. Off.



question of dependents does not arise in many cases, as it will in the United States. Moreover, an employer can arrange for the staggering of periods of training among his employees so that too many will not be absent at one time.

While the problems of equipping a nation for war are of paramount importance, they bring with them a host of other problems—taxation, government borrowing, control of prices and supply, foreign exchange—all of them having an impact on the personal lives of all residents of the Dominion. Industry, too, is having its share of problems—the natural result of a national economy turned almost completely from peace to war pursuits. Many of these problems were discussed and explained to the business papers editors by the government officials immediately concerned with them, and they will be the subject of a second article on Canada's war effort to be published next week.

40-hr. Work Week Goes Into Effect on Oct. 23

Washington

• • • The new 40-hour work week, which becomes effective Oct. 23 under the Fair Labor Standards Act, will apply for the first time to the first full work week beginning on or after midnight, Oct. 23, under a ruling made by the wage-hour administrator.

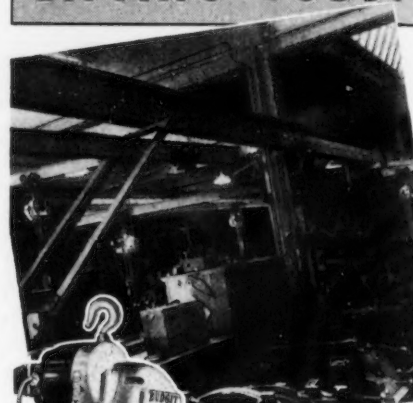
While the maximum work week without overtime is fixed by the law at 40 hr. beginning on Oct. 24, the statutory minimum wage does not increase until Oct. 24, 1945, at which time it will be fixed at 40c. an hr.

1939 Tractor Production 28% Under 1937 Valuation

Washington

• • • Tractor production in 1939 was valued at \$253,951,435, a decrease of 28.2 per cent under the 1937 value of \$353,296,846, according to the Bureau of the Census. The industry as classified by the bureau includes establishments engaged primarily in the manufacture of agricultural tractors, tractors used on construction work and industrial tractors.

MECHANIZE YOUR LIFTING JOBS!



Install Portable Electric "Budgit" Hoists at all places where lifting is done manually or with chain blocks . . . They speed the work, reduce waiting time of men and machines, and promote efficiency . . . They are the first step towards mass production methods!

"Budgit" Hoists come in sizes to lift loads up to 250, 500, 1000, and 2000 pounds with speeds to suit today's tempo . . . You can afford "Budgits"! Prices start at \$119. and there's nothing else to buy . . . You simply Hang up, Plug into the nearest electric socket and use!

Send for catalog containing complete information, also "Time Savings Calculator" that shows savings they earn.

SHAW-BOX CRANE & HOIST DIV.
MANNING, MAXWELL & MOORE, INC.
402 BROADWAY • MUSKEGON, MICH.

Makers of all types and sizes of Electric and Hand Operated Cranes and Electric Hoists . . . Send all your crane and hoist inquiries to "Shaw-Box"!

Portable Electric
"BUDGIT" HOISTS

Ohio Foundrymen Meet This Week in Cleveland

Cleveland

••• Northeastern Ohio Chapter, American Foundrymen's Association, at its meeting in the Cleveland Club, Oct. 10, is scheduled to hear the following talks: "Core Blowing," by R. F. Lincoln, sales manager, Osborn Mfg. Co.; "Cleaning of Castings," by George A. Boesger, chief engineer, W. W. Sly Mfg. Co.; and "Sand Treating and Handling," by Lester B. Knight, Jr., vice-president, National Engineering Co., Chicago.

Associated Tool Dealers To Visit Monarch Plant

Sidney, Ohio

••• An inspection trip to the Monarch Machine Tool Co. plant here has been scheduled for Tuesday evening, Oct. 22, in connection with the fall meeting of the Associated Machine Tool Dealers in nearby Dayton. All departments of the plant, including the latest addition completed last summer, are operating at capacity. The visitors will see improvements recently completed in the casting-finishing department and the plant's new fluorescent and mercury vapor lighting system.

Cornell Plans Classes For Aircraft Workers

••• Cornell University will open in Buffalo Oct. 7 an extension center giving advanced training in aeronautical engineering to employees of the vitally important aircraft industry. The plan will bring the faculty to the industries and give courses after working hours, so that production will not be curtailed.

These courses, conducted at the Burgard Vocational High School, will be the first ever given off the campus by the Cornell college of engineering.

International Combustion Engine Output Drops 11%

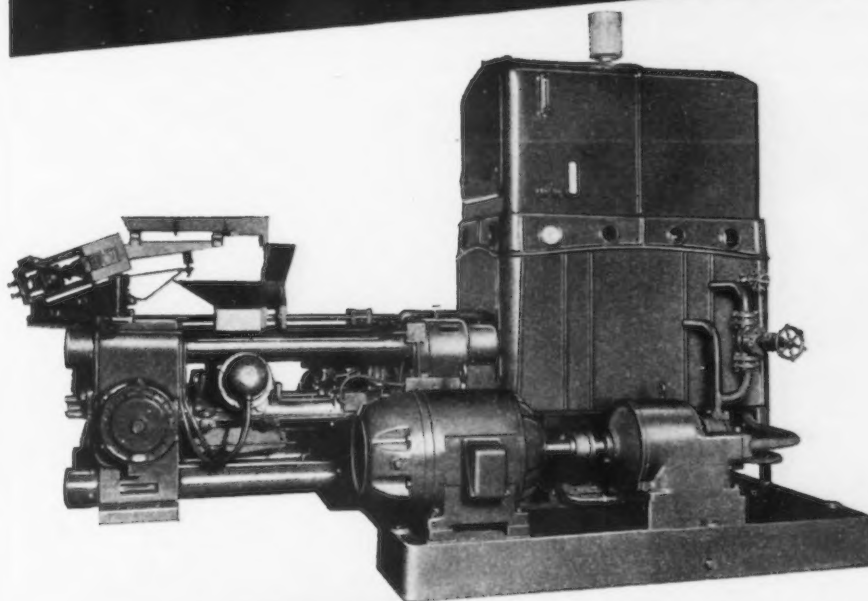
Washington

••• Marking a decline of 11 per cent, the value of internal combustion engines, except for aircraft and motor vehicles, produced in 1939 was \$110,357,964 compared with \$124,177,118 in 1937, according to the Bureau of the Census.

Salvage

BORINGS and TURNINGS

the Modern Milwaukee Way!



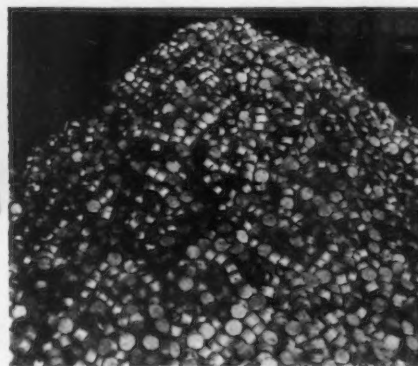
Advantages of: BRIQUETTING Borings and Turnings

- 1 **SUBSTANTIAL SAVINGS** by replacing a higher price scrap.
- 2 **CLOSER METAL CONTROL** because briquettes are composed of a clean machineable metal of known analysis.
- 3 **MINIMUM METAL LOSS** because of uniform size and density of briquettes.
- 4 **CONSERVATION OF SPACE.** Materials are used up daily.

CONSERVATION of materials results in lower production costs and paves the way to greater profits! The more materials you salvage, the bigger the dividend check.

MILWAUKEE HYDRAULIC BRIQUETTING PRESSES make it possible for you to recover your metal turnings and borings. These sturdy machines convert metal swarf of all kinds into solid metal briquettes that replace the highest grades of metal scrap. Capacities— $\frac{3}{4}$ ton to 4 tons per hour. Write for full particulars.

Cast iron briquettes from a Milwaukee Hydraulic Briquetting Press. Handled with magnet to material yard, ready for remelting in the cupola. Note uniformity.



MILWAUKEE FOUNDRY EQUIPMENT CO.

3238 WEST PIERCE STREET • Cable Address "MILMOLDCO" • MILWAUKEE, WISCONSIN

Tax Law, Study in Confusion, Passes

Washington

• • • Because it represents a masterpiece in confusion and merely scratches the surface in providing badly needed revenue, the new excess profits tax law was out-

moded almost before it was given final approval. Indeed, members of the conference committee specifically instructed Congressional tax experts to study possible improvements, particularly in the matter of credit carry-overs, with a view to recommending changes to the next Congress.

The bill as finally passed is regarded as less burdensome on business and more liberal general-

ly than the House-approved version. Moreover, conferees struck from the measure the Senate-approved Connally amendment which would have set up a steeply graduated schedule of corporate and personal income excess profits taxes, to become effective automatically upon the declaration of war. In turning thumbs down on this amendment, conferees decided to hold in abeyance for further study, possibly until the outbreak of hostilities, the subject of war taxes.

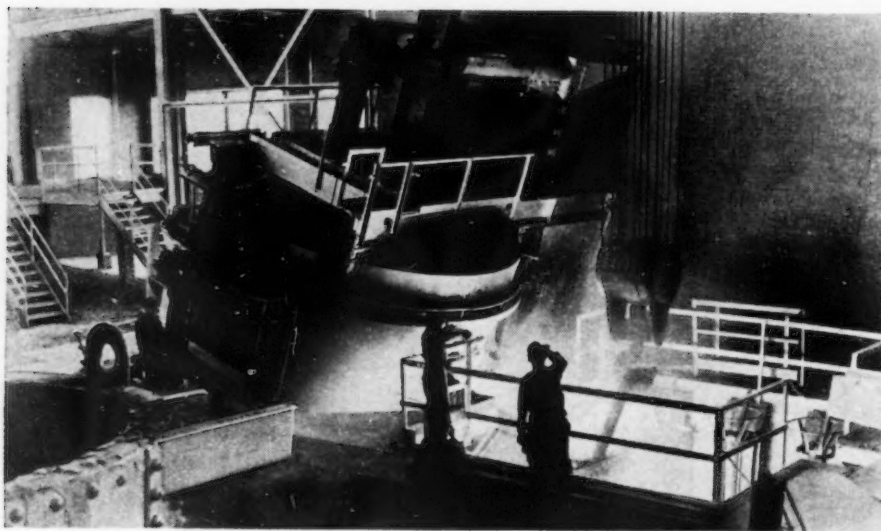
The much-discussed amortization provision will permit corporations building new plant facilities certified as necessary for national defense to amortize the total cost of such facilities out of tax free earnings over a period of five years. This provision is applicable only to new facilities completed after June 10, 1940. The measure repeals, for the duration of the emergency, the Vinson-Trammell profits limitation law.

Briefly, the new tax law contains these provisions:

1. The tax on normal income of corporations with net profits of more than \$25,000 is increased 3.1 per cent, bringing the effective rate to 24 per cent.

2. Additional graduated taxes, ranging from 25 per cent on excess profits of not more than \$20,000 to 50 per cent on amounts over \$500,000, are imposed on all corporations not specifically exempted.

3. In computing excess profits, a corporation can take its choice of two formulas specified in the law—the average earnings method, or the invested capital method. In either event, corporations are exempt from the tax to the extent that they are allowed initial excess profits of \$5,000.



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SWINGING ROOF FURNACES

***Produce Top Quality Steel
at Lower Cost!***

The photograph shows one of a pair of 16'0" Swindell swinging-roof electric arc melting furnaces, each 35-ton capacity, at the Copperweld Steel Co., Warren, Ohio.

SWINDELL-DRESSLER CORPORATION
PITTSBURGH, PA.

Woodward Iron Earns \$1,363,611 in 9 Months

Birmingham

• • • Woodward Iron Co. reports earnings of \$1,363,611 for the nine months ending Sept. 30, the equivalent of \$4.52 a share on 305,913 shares outstanding on that date. During the first nine months of 1939, the company reported earnings were \$387,848. Income for the third quarter of 1940 was \$558,425 as compared with \$150,797 for the corresponding period in 1939.

British Pressure For Steel Grows

London

Intensification of the war in the air has led to a still greater increase in the demand for iron and steel and ferrous products for war purposes in the United Kingdom. As a result production in practically all mills continues around record level. Admiralty requirements continue at a high level, while Air Ministry and War Office orders are still increasing, especially for such material as that required for military huts and for anti-aircraft purposes. Furthermore, the heavy pressure of demand for a great variety of defense products — ammunition, mines, shell case holders, etc., has continued, providing enormous activity in many engineering trades.

A great source of gratification to the steel trade is the rapidity with which supplies of raw material are now arriving. The scrap campaign throughout the country has reached record proportions and produced unexpectedly large supplies. Dumps are scattered in every district ready for removal to the mills as required. In addition to arrivals of scrap from abroad, there are also imported semi-finished and finished steel in large quantities, and the steady operations at the blast furnaces indicates that the problem of ore supplies is also being overcome. Substantial pig iron shipments are also arriving from overseas, and further arrangements have been made for imports from India.

Birmingham Plant Goes 3 Years Without Accident

Birmingham

• • • National Cast Iron Pipe, division of James B. Clow & Sons, has gone for more than three years without a single lost-time accident. The last time a red light was flashed on the bulletin board to denote a lost-time accident was July 23, 1937. Years ago this same plant, which employs approximately 275 workmen, was awarded an inter-company trophy for going a year with only 27 lost-time accidents.

Disston Will Expand Armor Plate Facilities

Washington

• • • Providing for increased facilities for manufacture of armor plate, the War Department last Friday announced that a negotiated contract has been made with Henry Disston & Sons, Inc., Philadelphia. The contract involves an addition to the present Disston plant on land now owned by the

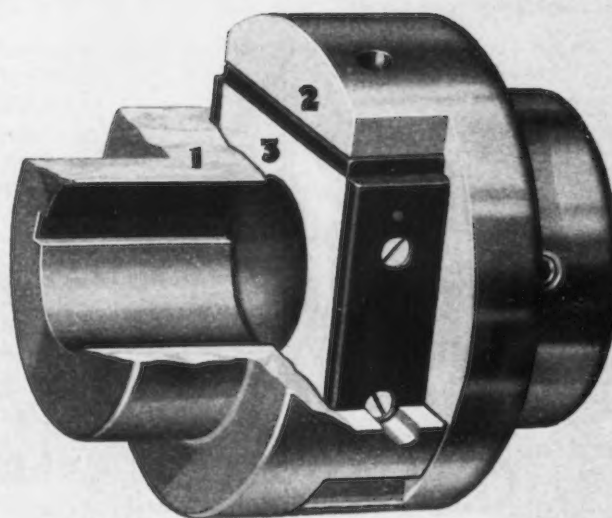
government, which will more than double the capacity of present facilities. The cost of the plant and equipment will be \$1,108,400. The title to the addition and plant will remain with the government. The plant will be operated by Henry Disston & Sons, Inc.

The plant will be constructed by Barclay White & Co., Philadelphia. The architect and engineer will be the Irving S. Towsley Co., Philadelphia.

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2 identical jaw flanges—1 floating center block



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With even minor equipment adjustments becoming a near-major obstacle to sustained high speed production, American Flexible Couplings offer one way to reduce "down time" for coupling maintenance to a minimum.

Advanced mechanical design—based on an improved application of the Oldham Principle of Power Transmission—provides the flexibility . . . not flexible materials. Floating metallic center block (3) is free to float in any direction between jaw flanges (1) and (2) compensating for angular and offset misalignment without cramping or binding bearings.

Wear is absorbed by inexpensive, easily replaced wearing strips on the load bearing surfaces of the floating metallic center block (3). For complete information, write direct to factory.



AMERICAN FLEXIBLE COUPLING COMPANY • ERIE, PA.

(Trade name reg. U. S. Pat. Off.)

American Flexible Couplings Provide Flexibility Without Flexible Materials

Canada's War Buying Reaches New Peak

Toronto

•••The Department of Munitions and Supply in the last 10 days has awarded contracts with Canadian companies to a value of \$25,600,522, making a new high record for any similar period since the outbreak of war. The

most important orders placed were for mechanical transport valued at \$10,593,683 with construction undertaking second on the list at \$9,575,368; machinery, tools, electrical equipment and instrument orders totaled \$474,908; and aircraft awards amounted to \$437,693. The awards include:

Mechanical transport—General Motors Products of Canada, Ltd., Oshawa, Ont., \$4,344,556; Ford

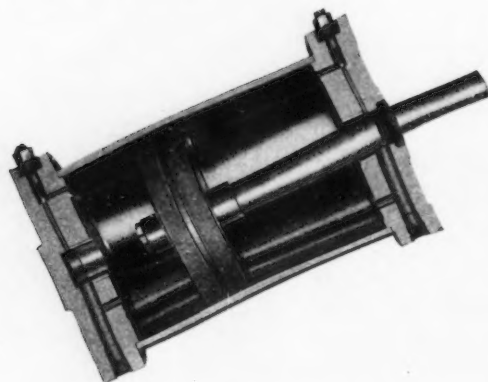
Ford of Canada Busy On War Vehicles

Toronto

•••Officials of Ford Motor Co. of Canada, Ltd., Windsor, state that it is reasonable to expect a good volume of new business for the company this year as industrial activity is reaching a high level with a corresponding betterment of purchasing power. E. F. Millard, advertising manager, stated that the company is supplying more than 50,000 vehicles for military purposes to Canada, Great Britain and other Empire countries. It has been able, he said, to supply more military vehicles for Empire countries than all other Canadian automobile manufacturers combined. War work has priority over all other production.

for greater efficiency in power movement

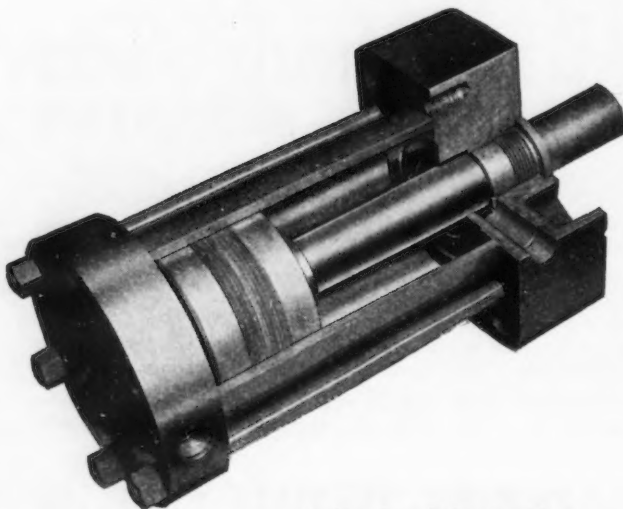
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have hard chromium plated cylinder walls and piston rods, to be protected against rust and against wear.

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Jackson, Michigan

agents in principal cities

Motor Co. of Canada, Ltd., Windsor, \$4,793,588; Chrysler Corp. of Canada, Ltd., Windsor, \$334,460; Ross Cycle & Sports, Toronto, \$346,534; International Harvester Co. of Canada, Ltd., Ottawa, \$244,760; Dominion Truck Equipment Co., Ltd., Kitchener, Ont., \$61,648; La France Fire Engine & Foamite, Ltd., Montreal, \$189,060.

Machinery and equipment — Plessisville Foundry, Plessisville, Que., \$31,014; Rudel Machinery Co., Ltd., Montreal, \$28,359; T. E. Ryder Machinery Co., Montreal, \$26,380; Brunner Corp. (Canada), Ltd., Toronto, \$34,214; Dominion Engineering Co., Ltd., Montreal, \$85,023; Ontario Hughes-Owens Co., Ltd., Ottawa, \$124,360.

Aircraft Supplies — Canadian Wright, Ltd., Montreal, \$240,103; Canadian Vickers, Ltd., Montreal, \$31,045.

Dockyard supplies — Horton Steel Works, Ltd., Toronto, \$52,990; Anglo Canadian Wire Rope Co., Ltd., Montreal, \$29,716.

Construction—Anglin Norcross (Quebec), Ltd., Quebec, Que., \$2,500,000; A. W. Robertson, Ltd., Toronto, \$1,097,600; Poole Construction Co., Ltd., Edmonton, Alta., \$920,000; Carter-Halls-Aldinger Co., Carberry, Man., \$880,000; Bennett & White Construction Co., Ltd., Calgary, Alta., \$773,728; Carter-Halls-Aldinger Co., Ltd., Montreal, \$920,000.

A.I.S.C. Lists Ways To Prevent Delays

In an effort to prevent delays in the construction of buildings essential to the national defense program, the American Institute of Steel Construction, New York, has issued the following warning:

"The American Institute of Steel Construction feels that in order to insure delivery of fabricated structural steel in accordance with the promise of the fabricator, it is timely to point out to all purchasers the wisdom of having their design drawings complete and cor-

rect at the time of placing contracts.

"The national defense program for the next few months will increase the activity of fabricating plants above the level of the years just passed, and it seems advisable to point out the desirability for better cooperation of architects, engineers and buyers with the fabricators in coordinating the entire process for preparing plans

and specifications and placing contracts for the fabricating and erection work.

"Fabricated structural steel is not a product that can be manufactured in advance and carried in stock, but must be rolled and fabricated to order to fit the definite and precise requirements for a particular project in strict accord with previously prepared plans.

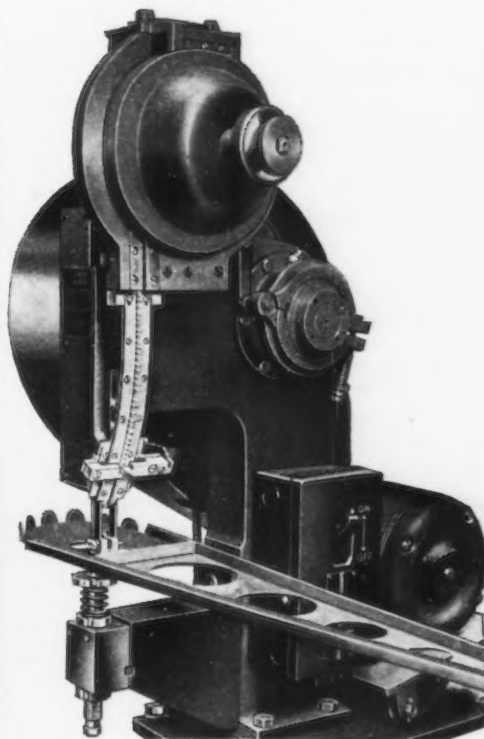
"The delivery of the finished

These fighting planes are being warmed up before the take-off at Randolph Field, "West Point of the air," where the U. S. is training combat pilots for its ever-expanding air forces.



for greater efficiency in solid rivet setting

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accomplishes a rigid joint that *won't* loosen

a completely filled hole

no flashing

a neat balanced head

put in at an average rate of 1500 per hour. Approach to the maximum of 3200 per hour depends on the ease with which the work can be handled.

The RIVITOR is shown here setting aluminum alloy rivets in aircraft wing sections. These machines ably handle many jobs in many industries. Send along two or three samples of your work, a handful of rivets and specify the type of riveted head you require. The pieces will be "RIVITORed" promptly and returned for your inspection.

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For those who prefer standard numbered steels we have

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4615	3145	X4340 (Aircraft)
4615 (Elec. Fur.)	X4340	4140
3130	6145	4150
3135	6150	

For those who wish to take advantage of constant metallurgical improvement and development long before they are incorporated in S.A.E. standards, or where close selection of material for analysis, grain size, control and quality is desired, we offer

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GRADES

THE HY-TEN OF TODAY IS THE STANDARD STEEL OF TOMORROW

"A" IX
"A" 15

"B" 2
"B" 3X

"B" 4
"B" 5

"B" 43
"M" Temper

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When corrosion is a factor, consider these alloys:

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A high silicon iron alloy highly resistant to all commercially used corrosives at all strengths and temperatures, and to abrasion and erosion. Although machinable only by grinding, Duriron (and Durichlor for muriatic acid) is available in standard engineered forms as pumps, valves, steam jets, and as special castings.

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A machinable nickel-chromium low carbon (0.07% max.) stainless steel for sulfuric and other acids in all concentrations, and for all strengths and temperatures of caustic solutions.

DURCO STAINLESS STEELS

Durco Stainless Steels (18% chrome—8% nickel series) and special alloys of the chrome-nickel and chrome-iron series are available in standard equipment and in special castings.

Consider The Duriron Company as a Source of Supply for corrosion-resisting equipment. Our facilities for the production of corrosion-resisting alloys and equipment are extensive and complete.

Send us your inquiries, blue prints or specifications.

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Dayton, Ohio

product is governed not by the date upon which the contract is awarded, but rather by the date on which the fabricator receives the completed plans from which he can order his material and prepare his shop details.

"It is also important to remember that the fabrication process must be so synchronized and timed that when the operation is started in the shop, operation after operation will follow in proper sequence and at a speed that will insure delivery of the finished product at the time agreed.

"Any interference with the timing of these operations makes delay inevitable.

"Changes in the plans after the fabricator has started work cannot but result in delay and disruption of the coordinated process and buyers may, therefore, perform a valuable service for themselves by seeing to it that there be no such changes. As in the case of all manufacturing operations, speed in delivery cannot be achieved if it is required to start work with inadequate data; particularly if the data are subject to subsequent changes during the manufacturing process.

"For the best interest of the government and of the public, the American Institute of Steel Construction and its members believe that these facts should be broadly known and frankly stated."

Westinghouse Plans \$500,000 Expansion at Cleveland

Cleveland

••• Westinghouse Electric & Mfg. Co. has announced a \$500,000 expansion of its Cleveland lighting division involving the construction of four buildings. W. F. White, division manager, said contracts for the buildings have been awarded to the Austin Co., and work is to get under way at once. Site for the expansion is west of the present plant which overlooks Bulkley Boulevard.

The expansion is made necessary because of government defense orders and increased demands for the division's peacetime products, Mr. White said. Manufactured here for the government are airport and seadrome floodlights and beacons, Army and Navy searchlights and other special types of lighting equipment.

Depression Plan Aids Wellman Engineering

Cleveland

••• A plan adopted about six years ago by the Wellman Engineering Co. as a depression expedient to help provide employment for its workers is now bearing fruit.

The company, which is located at 7000 Central Avenue, bought large quantities of plain steel and fabricated it with its own employees. It was thought that in the distant future the company might be able to use a plant addition. Foundations were also built.

Recently the steel was taken out of the storage yard and the framework of the new plant addition, which will consist of eight bays providing 12,000 sq. ft. of additional floor space, has been erected. The additional space will be used by the structural shop.

Industries of Alabama Hold Meeting Oct. 18

Birmingham

••• Paul W. Litchfield, Akron, Ohio, chairman of the board, Goodyear Tire & Rubber Co., will speak on "America's Future" at the annual meeting of the Associated Industries of Alabama, which will be held here Oct. 18. Other speakers will include Ray S. Smethurst, Washington, associate counsel of the National Association of Manufacturers and William M. Neal, Birmingham, secretary of Sloss-Sheffield Steel & Iron Co.

Industrial Milestones

Thirty-three years ago (1907) the Kirk & Blum Mfg. Co., Cincinnati, was organized at Cincinnati. Kirk & Blum has specialized in the planning, fabrication, and erection of dust control systems, ventilating and cooling systems and, since 1924, industrial drying and baking ovens. The organization numbers 200, including a research and engineering staff, draftsmen, sheet metal artisans and field erecting crews.

Your Machine Tool Output

DOUBLED OVERNIGHT

An Amazing CONTRIBUTION To National Defense



In the present National Emergency, every possible measure must be taken to speed up production not only of armaments such as airplanes, guns, tanks and battleships, but also vital auxiliary equipment including trucks, tractors, railroad cars, locomotives and other steel products.

Fortunately, the capacity of existing equipment for machining steel parts can be doubled almost overnight by equipping them with KENNA-METAL-tipped tools. These tools can be quickly installed and their use requires little change in present shop practice.

KENNA-METAL, a new discovery in carbide tool materials, machines extremely hard steel at greatly increased speeds and with far less "down time" for resharpening tools. Do your share to speed up National Defense—wire, write or phone today for a free survey to show how KENNA-METAL can double production of steel parts in your plant. No obligation—act now!



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LATROBE, PENNSYLVANIA, U.S.A.

EASY, ACCURATE, WELDING REGARDLESS OF size or shape

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Navy, Army Agree On Wagner Act

Washington

••• The War and Navy Departments last week agreed to require manufacturers contracting with the government to comply with the Wagner Act and other federal labor laws, thereby making effective a proposal which the CIO has

sponsored in Congress for the last three years but on which Congress persistently has refused to place its stamp of approval.

Sidney Hillman, member of the National Defense Advisory Commission in charge of labor policies, made public letters from Secretary of Navy Frank Knox and Assistant Secretary of War Robert P. Patterson, in which both said

that the defense commission's statement of labor policy, made public by the White House on Sept. 13, will be made a condition of all contracts to be awarded in the future. The clause covering compliance with existing labor laws provides:

"All work carried on as part of the defense program should comply with federal statutory provisions affecting labor wherever such provisions are applicable. This applies to the Walsh-Healey Act, Fair Labor Standards Act, the National Labor Relations Act, etc. There should also be compliance with state and local statutes affecting labor relations, hours of work, wages, workmen's compensation, safety, sanitation, etc.

Both departments, it was disclosed, are formulating procedure through which the statement of labor policies, together with a defense commission recommendation on purchasing principles governing negotiated contracts, will be incorporated into contract provisions. Both letters were phrased in similar language.

Asked at a subsequent press conference to elaborate on his letter to Mr. Hillman, Secretary Knox said he thought the communication spoke for itself. He would not concede that the letter represented a departure from the Navy's attitude as expressed before a Congressional committee several months ago when Congress had up for consideration a CIO-sponsored bill to blacklist Wagner Act violators.

"We're getting complete compliance," Mr. Knox said when asked if the Walsh-Healey Public Contracts Act was hampering the defense program.

The Navy Department made that complaint itself several months ago when it was seeking authority to negotiate contracts without regard to the customary competitive bidding requirements. The Navy sought at that time exemption of such contracts from the Walsh-Healey law, which fixes maximum hours of labor and, in some industries, minimum rates of pay. But Congress, after responding to cries from the Administration and the CIO, did not see fit to adopt the Navy's recommendation.

Hence, in pledging adherence to the defense commission's statement of labor policy, the War and



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Stearns Automatic Spout separators (one of which is shown above) and magnetic pulleys are constantly and efficiently catching tramp iron such as we picture here from the processing flow of a large soy bean mill.

Tramp iron is a deadly menace in any man's plant—may ruin your product, your reputation . . . seriously handicap your business, jam up your machinery, cause costly

repairs, shutdowns, injury to employees, law suits and any number of nasty conditions that steal profits.

Your best detective is Stearns magnetic equipment. Provides positive, automatic protection with low initial and maintenance cost. If you have a tramp iron problem write for our Bulletin 93 on spout separators or Bulletin 301 containing full details on Stearns magnetic pulleys.

If it's magnetic we know how to design, build and apply it. Consult magnetic headquarters.

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Navy Departments are reversing themselves on the Walsh-Healey law and, what appears to be more important, on the subject of requiring contractors to comply with the Wagner Act. Neither department has ever condoned violators of the Wagner Act but they have emphasized repeatedly that confining government contracts to firms complying with the Wagner Act would be another restriction on contracting procedure that could well be avoided.

It has been explained before Congressional committees that

whether any other course would be open if the contracting agency was faced with a violation. In any event the War and Navy Departments appear to have tied their hands with greater restrictions on contracting procedure at a time when, because of the exigencies of the emergency, they had hoped to be freed from straight-jacket purchasing methods.

Mr. Hillman, who is also presi-

dent of CIO's Amalgamated Clothing Workers of America, made the correspondence public at a press conference, at which he repeated several times that "no negotiated defense contracts will be awarded to any firm which is in violation of any laws affecting labor."

A violator of the Wagner Act, according to an informal opinion by Attorney General Robert H. Jackson, is one found to be such

Ordering of 18,641 Planes Completed

Washington

• • • The War Department has awarded a plane contract totaling \$141,320,610 to Douglas Aircraft Co., Inc., Santa Monica, Cal., and a \$37,770,981 contract for planes to North American Aviation, Inc., Inglewood, Cal. These contracts complete the War Department program for procurement of 18,641 planes.

contracting officers already were required to check on compliance with more than 200 separate statutory enactments in awarding government contracts.

Congress has consistently refused for the last three years to pass CIO-sponsored legislation which would black-list Wagner Act violators and make them ineligible for government contracts. The War and Navy Departments protested vigorously against such a provision, insisting that it would put another hazard in the way of expeditious purchasing procedure.

Under the measure sponsored by the CIO, Wagner Act violators would have been prohibited from receiving government contracts. Under the labor policy to be followed by the contracting agencies for the defense program, it is not clear just what would be done in the case of a company whose services were held to be indispensable to the program.

Despite the Navy's recent statement that it has no intention of invoking the "draft industry" provision of the Selective Service Act, a question worth pondering is

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PICKLING AT 210°F.,
WEIRTON STEEL
COMPANY USES
ASPLIT CEMENT TO
BOND THE BRICK
LINING OF TANKS

Two of the four continuous pickling tanks in the plant of the Weirton Steel Company. All are brick lined and bonded with Asplit Cement. Surface joints only $\frac{1}{8}$ " to $\frac{1}{4}$ " thick present a surface that will never be attacked by hot acid and steam.

● Production requirements at Weirton Steel Company made it necessary to raise the temperature to 210°F. in the brick-lined pickling tanks. Some acid-proof cements would not stand such heat. Asplit Cement* was used because it withstands temperatures up to 350°F., in addition to resisting acid and abrasion even better than the bricks themselves.

Asplit Cement forms tough, hard surface, liquid-tight joints. It is as easy to work as ordinary mortar, yet a very thin joint or coating forms an effective binding and gives greater economy in construction. Its setting time is readily controlled by temperature.

Many plants use our Penchlor Acid-Proof Cement*, which is inert to all acids except hydrofluoric. Pennsylvania Salt Manufacturing Co., Widener Bldg., Phila., Pa.—New York • Chicago • St. Louis • Pittsburgh • Tacoma • Wyandotte.

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by the National Labor Relations Board. In a letter to Mr. Hillman, the Attorney General called it "too clear to admit of controversy" that the findings of the NLRB are "binding and conclusive upon the other agencies of the executive branch of the government unless and until these findings are reversed by a court of competent jurisdiction."

The Justice Department, according to Mr. Hillman, also is preparing an opinion on the right of the War and Navy Department to enforce compliance with labor legislation by firms which negotiated defense contracts prior to the adoption of the labor policy statement.

While observers in Washington had expected that the SWOC will be quick to seek invocation of the requirement in its organizing drive against Bethlehem Steel Corp., Mr. Hillman said he had been assured by that company that it is complying with the Wagner Act, the Walsh-Healey Act and other federal labor laws. Secretary Knox's "full compliance" statement substantiated Mr. Hillman's remarks.



Washington

• • • The controversy surrounding the statement by Sidney Hillman, labor member of the National Defense Advisory Commission, that defense contracts would go only to companies complying with the Wagner Act subsided somewhat this week after defense commission officials said quietly that the policy to refuse such contracts was permissive and not mandatory.

Nevertheless observers were awaiting with interest the new contract forms being drawn by the War and Navy Departments. According to letters sent by these departments to Mr. Hillman last week, the new forms will embody the defense commission's recommendations on labor policy which provide that all work under the defense program comply with Federal statutory provisions affecting labor.

Implications of the move became apparent last week after Attorney General Robert H. Jackson informally ruled that one agency of the government must recognize orders of the National Labor Relations Board until reversed in a court of competent jurisdiction. In

other words, the effect of the Jackson opinion would be to place the NLRB in a position to say who would be barred from defense contracts if the defense commission decided to adhere religiously to the new defense contracting policy.

Mr. Jackson, who said in his ruling that in applying the new labor policy a company should be considered a violator of the Wagner Act when the labor board so decided, categorically denied that he had ruled on the question of whether contracts could be denied alleged Wagner Act violators.

"The fact is that I have not given and have not been asked for any opinion as to whether violators should or should not be awarded contracts," the Attorney General said. "It appears that the National Defense Commission has itself determined that, as a matter of policy, the work carried on as a part of the defense program should comply with Federal statutory provisions affecting labor, including the National Labor Relations Act, and that Congress was so advised on Sept. 13, 1940."

Nevertheless the timing of the Jackson opinion led to the belief in many quarters that the Attorney General was playing ball with the labor member of the defense commission at a time when the SWOC was slated to go into a huddle in Pittsburgh and when CIO chieftain John L. Lewis had an appointment with Presidential Candidate Wendell L. Willkie. An informal opinion from the head of the Justice Department is a rare occurrence. Indeed, Mr. Jackson himself last February wrote Representative Howard W. Smith, chairman of the House committee investigating the NLRB, that attorneys general had consistently followed the practice of rendering opinions only to executive agencies.

S-T Refunding

Youngstown

• • • Youngstown Sheet & Tube Co. is discussing plans with its bankers, Kuhn, Loeb & Co. and Smith, Barney & Co., to refund the company's outstanding \$55,000,000 series C 4 per cent bonds, according to Frank Purnell, Sheet & Tube president. The company is not considering any action with respect to its convertible 4 per cent debentures.

Quick Action



This spring return valve gives faster operation of air operated equipment, for release of the foot pedal means instant reversal of the cylinder. Control is simplified; convenient foot pedal operation leaves the operator's hands free. Especially adapted to operation of arbor presses, riveters, and similar equipment. Hannifin disc-type valves have no packing and no leakage or packing maintenance troubles. Write for Valve Bulletin 34-A with complete specifications of all types.

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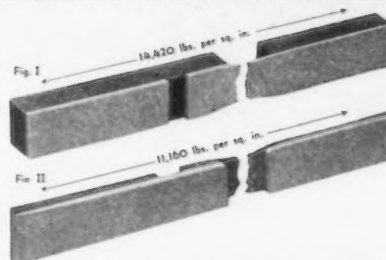
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JESSOP SILVER-PLY Stainless-Clad STEEL

These test specimens of SILVER-PLY had portions of the stainless cladding and the mild steel backing cut away on opposite sides so that one square inch would be in shear during the tensile tests, thus giving the actual lbs. per sq. in. pulling force. Note that in both cases the strength of union between the component parts is greater than the load necessary to break the cladding (Fig. I) or the mild steel backing (Fig. II).



Tensile test specimens of Type 304 SILVER-PLY Stainless-Clad Steel: Fig. I, 20% clad; Fig. II, 50% clad. These tests were conducted by an independent laboratory.

Severe tests such as these prove the reliability of SILVER-PLY Stainless-Clad Steel—both when fabricated and when in service. SILVER-PLY offers the high corrosion resistance of solid stainless while saving up to 45% in material costs. For complete information address: JESSOP STEEL CO., 537 Green St., Washington, Pa. ESTABLISHED 1901.



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Jessop Steels of America
CARBON · HIGH SPEED · SPECIAL ALLOY
STAINLESS and COMPOSITE STEELS

Hillman Denies Threats of Order Cancellations

Washington

• • • Sidney Hillman, labor member of the National Defense Advisory Commission, denied on Tuesday before the special House committee investigating the Labor Board that he had threatened industrial concerns with cancella-

tion of government contracts since being named to the defense agency.

The labor representative, who said he was vice-president of the CIO but had not participated in any CIO activities since his nomination to the defense commission, testified that he would rather resign from the agency than attempt to impede defense efforts.

Mr. Hillman was called before the committee together with At-

torney General Robert H. Jackson, Secretary of Navy Frank Knox, Assistant Secretary of War Robert P. Patterson, and Rear Admiral Samuel M. Robinson, chief of the Navy's bureau of ships, after a storm broke in Congress over a statement of labor policy by the defense commission on Sept. 13.

Sheet & Tube Employees Organization Dissolved

Youngstown

• • • On a ruling by the Cleveland office of the National Labor Relations Board, the Independent Society of Workers, composed of around 4300 employees of Youngstown Sheet & Tube Co., is dissolving. Citing a case involving the Westinghouse Electric & Mfg. Co., Oscar Smith, regional director of NLRB, held that the society's setup contained traces of continuity with a former employee organization, despite a change of name and by-laws.

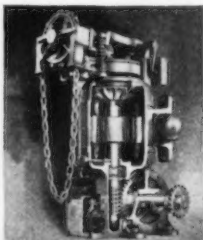
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The KINNEAR MANUFACTURING COMPANY
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Institute Issues Booklet On "Steel Makes the Home"

• • • Comforts, conveniences and safety which distinguish the average modern home from a home in the Middle Ages are due chiefly to steel, the American Iron and Steel Institute says in a new 34-page pictorial booklet called "Steel Makes the Home."

The booklet, which contains more than 130 photographs, notes that all-steel houses are now practical and available, while use of steel in home construction in conjunction with other materials is growing. Copies of the booklet may be obtained without cost from the American Iron and Steel Institute, 350 Fifth Avenue, New York.

Old Valley Mill at Youngstown Burns

Youngstown

• • • The old Valley Mill, built in 1871 by the Mahoning Valley Iron Co. and at one time the largest plant in the Mahoning valley, was destroyed by fire here Oct. 6. It was one of the first steel mills lighted by electricity. Although the plant had been idle for 25 years, it was used for storage of patterns by Republic Steel Corp.

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will also be available at
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CLEVELAND DETROIT

British Claim Bombers Cut German Steel Output by 50%

London

••• Steady and successful bombing of German and German-controlled iron and steel mills by the Royal Air Force has by now, it is claimed, reduced German steel production by 50 per cent. It may be asked why Germany has so far failed in her retaliatory raids to cause a corresponding reduction in British output.

Several reasons have been put forward in explanation. One is that British pilots have had far more experience of night flying than German and are consequently more skilled at locating their targets in the dark. This explains the indiscriminate bombing tactics recently adopted by the Germans. Daylight raids by Germans on British industrial targets have also largely failed due to the superiority of the intercepting R.A.F. fighter planes. Another reason is the greater destructive power of the bombs employed by the British to eliminate industrial plants. According to Sir Archibald Sinclair, Air Minister, the most destructive bombs used by the Germans on Britain have been found to be R.A.F. bombs captured in France.

A further reason for the fall in German output is believed to be the decline in the workers' morale due to lack of sleep. So badly has the morale been affected that penalties have had to be imposed for late arrival at work.

Knudsen Gives Position On Defense Contracts

New York

••• William S. Knudsen, member of the National Defense Advisory Commission in charge of production, told the Army Ordnance Association on Wednesday that recent implications that defense contracts would be withheld from contractors because of a pending Labor Board order were "going too far."

Referring to a statement of labor policy by the commission on Sept. 13, which said that contractors should comply with statutory provisions affecting labor, Mr. Knudsen said:

"This means to me that when

Blast Furnaces at 9 Points Bombed by RAF

••• Nine places at which blast furnaces are located have been bombed by British planes raiding Germany and Germany-occupied territory, according to the British Ministry of Information. These cities and towns were included in a list of 200 military targets in the R.A.F.'s "master plan" for bombing. They are:

Bonn, bombed four times; Essen, bombed 16 times; Frankfurt on the Main, 12 times; Hamburg, 3 times; Ickern, once; Meiderich, once; Mutterstadt, once; Sieburg, once; and Witten, once.

the courts have held that labor practices followed by a manufacturer violate the laws of the land, then, as a matter of policy only, defense contracts should not be given to that manufacturer until he changes his practices, and that's all it means to me. Certainly, the defense commission has no authority and does not want to undertake the job of enforcing the labor laws."

U. S. Army Tests New Quarter-Ton Trucks

Detroit

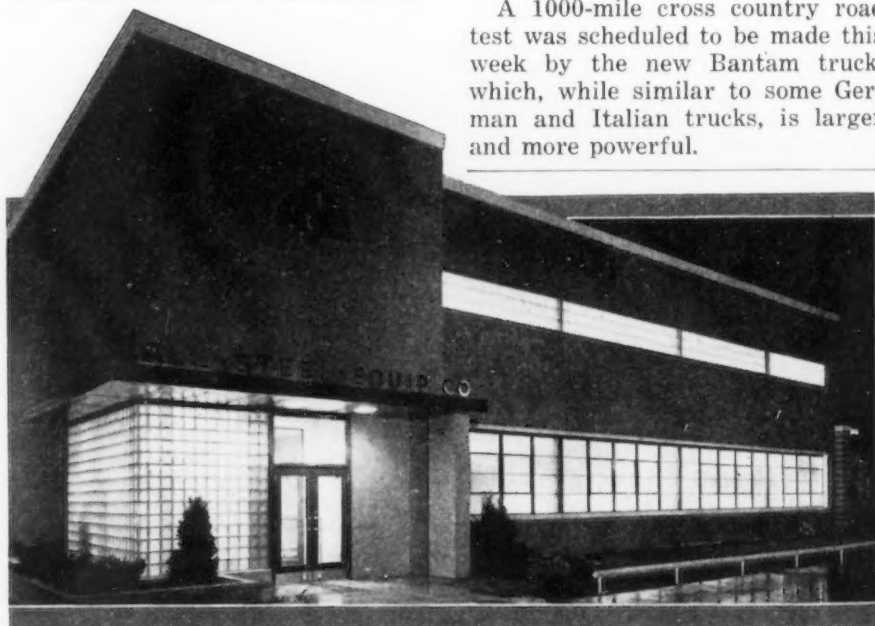
••• The motor industry was interested this week in reports that tests are going forward rapidly by the Army on new quarter-ton transport trucks produced by American Bantam Car Co. of Butler, Pa.

These units represent the lightest vehicles yet considered by the Army for motorization. Weighing 1800 lb., they boast speed and power characteristics far beyond any European counterparts. Involved in their manufacture is about 1500 lb. of steel per unit.

The Army, late in July, placed a contract with American Bantam for \$171,185. It is understood that if the tests are successfully completed, considerably larger orders may be forthcoming.

The Bantam midget truck has a wheelbase of 79 in., a tread of 47½ in., a 16-5.50 agricultural type tire which can run in mud. It weighs 1800 lb., has a speed of 60 to 65 miles an hour, mounts one machine gun, carries three to four men, has a 40-hp. engine, and a four-wheel drive. Displacement of the four-cylinder powerplant is 113 cu. in. compared with 215 cu. in. for some automobiles in the low-priced field.

A 1000-mile cross country road test was scheduled to be made this week by the new Bantam truck, which, while similar to some German and Italian trucks, is larger and more powerful.



ALL-STEEL-EQUIP CO., Aurora, Ill., now occupies this new "controlled-conditions" general office building. Completely air-conditioned, lighted solely by fluorescent tubes sunk in concealed troughs to provide continuous bands of light across entire office areas, all daylight and natural ventilation have been excluded from this windowless building. The company manufactures "Froz-n-Food" lockers, electrical products, shop equipment and office furniture.

Fixing of Scrap Price Ceiling Not Discussed

Washington

••• Committees of steel producers and iron and steel scrap dealers met here Tuesday with Leon Henderson, in charge of price stabilization, National Defense Advisory Commission, and surveyed the scrap market situation after which Mr. Henderson told THE IRON AGE that a canvass revealed a high level of activity and that scrap dealers reported they can keep up the supply level without any disturbance of the price structure. The steel people, he stated, expressed no fear that they would not get adequate supplies of old material at the current rate of production. He added that there was no discussion of fixing a price ceiling.

In a press statement, Mr. Henderson announced that dealers said there was no justification for any runaway price situation or any occasion for concern over securing adequate supplies for the defense program. Within a week, Mr. Henderson said, it is hoped to clear up the entire situation by discussion with principal producers of scrap such as the railroads and the principal metal working industries.

Representing the steel industry were Robert W. Wolcott, president, Lukens Steel Co.; L. D. Green, Bethlehem Steel Co.; J. C. Miller, vice-president, American Rolling Mill Co.; W. A. Murphy, Weirton Steel Co., and Thomas R. Aikin, president and treasurer, LaClede Steel Co.

The scrap industry was represented by Joseph E. Jacobson, Pittsburgh, president, Institute of Scrap Iron and Steel, Inc.; David J. Joseph, David J. Joseph Co., Cincinnati; Joseph E. Michaels, Hyman-Michaels Co., Chicago; A. L. Luria, Luria Bros. & Co., Inc., Philadelphia; Darwin S. Luntz, Luntz Iron & Steel Co., Canton, Ohio; Michael Bonomo, Schiavone-Bonomo Corp., Jersey City, N. J., and Edwin C. Barringer, executive secretary, Institute of Scrap Iron and Steel, Inc., New York.

W. L. Batt, assistant to Edward R. Stettinius, Jr., head of the National Defense Advisory Commission's industrial materials depart-

ment, represented the commission's division of mining and mineral products.

The iron and steel products section of the defense commission was presented by Walter S. Tower, president, American Iron and Steel Institute, and W. A. Hauck, Lukens Steel Co.

Among others present at the conference were Walther Mathesius, vice-president, U. S. Steel Corp. of Delaware, Pittsburgh; L. B. Block, Inland Steel Co., Chicago; W. W. McMillan, National Malleable & Steel Casting Co., Cleveland, and Herman Moskowitz, Schiavone-Bonomo Corp.

Ingot Output Nearly 91% For September

••• Production of open hearth and Bessemer steel ingots during September totaled 5,895,232 net tons, compared with 6,033,037 net tons during August, according to the monthly report of the American Iron and Steel Institute. In September, 1939, production amounted to 4,769,468 net tons.

Last month's total was lower than that of the preceding month because of the fact that there was one working day less in September than in August, as well as a Labor Day holiday.

The rate of operations in relation to capacity was actually slightly higher last month than in August, the rate for September having been 90.75 per cent of capacity, compared with 89.72 per cent in August, and with 72.87 per cent in September, 1939. Last month's operating rate was the highest since last November, when the rate averaged 93.71 per cent.

Steel ingot operations averaged 1,377,391 tons per week in September, compared with 1,361,859 tons per week in August, and with 1,114,362 tons per week in September, 1939.

For the third quarter of this year, production totaled 17,523,339 net tons, which was equal to 87.93 per cent of capacity, compared with 14,349,019 tons or 72.66 per cent of capacity in the second quarter of this year, and with 12,576,289 tons, or 62.63 per cent of capacity in the third quarter of 1939.

Plans for Coordination of Steel Supply Drawn

Washington

••• A Steel Mobilization Plan has been prepared under direction of the Army and Navy Munitions Board. It has been made available for use as a foundation upon which to build a system of emergency control of steel at such time as the increasing load of the industry makes necessary such a procedure, according to War Department sources.

The basic determinations under the plan have been stated as follows:

a. The ability of the steel industry to carry the military and civilian loads.

b. The method of coordination required to effect the most efficient use of this industry.

The recognized objectives are:

a. To facilitate the supply of steel to the War and Navy Departments and the Maritime Commission, in the time and quantity and of the quality required.

b. To meet the military requirements for steel with a minimum disturbance of the normal supply for civilian purposes.

c. To furnish the Office of the Assistant Secretary of War, the Army and Navy Munitions Board and the Council of National Defense, with a well defined picture of the emergency requirements for steel, the capacity of the steel industry, and the capacity percentages of individual steel plants required to meet the military load.

More Electric Annealing Furnaces for Follansbee

Pittsburgh

••• Follansbee Steel Corp. has placed an order for additional electric annealing furnaces with atmospheric control and auxiliary equipment. These new furnaces which are being installed immediately, according to W. T. Brownscombe, president, will further round out the finishing capacity for production of the company's high silicon forged steel sheets used in transformers and a wide range of electric power apparatus and will increase capacity for low loss transformer sheets by 50 per cent.

• **E. George Hartmann**, recently general manager of the Savannah Wire Cloth Co., has been appointed assistant manager of sales, round, flat wire and specialties division of the John A. Roebling's Sons Co., Trenton. He has had a long experience in the wire industry, including 21 years with Wickwire-Spencer Steel Co. After serving in general sales capacities, Mr. Hartmann became assistant manager of sales of the round, flat wire and specialties department in 1931 and later, in 1935, he was made sales manager of the hardware and structural steel division as well as sales manager of the American Wire Fabrics Co., a Wickwire-Spencer subsidiary.

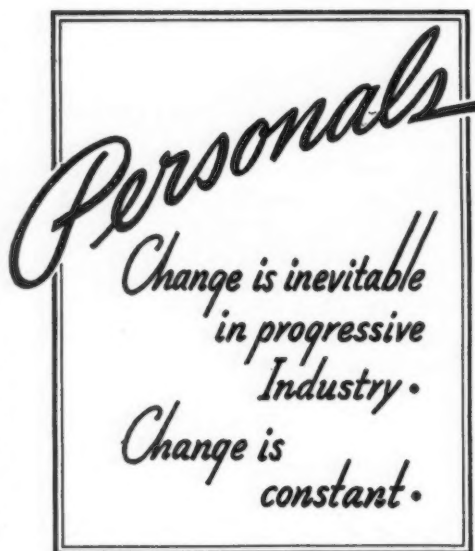
• **Arthur Mackmann**, formerly works manager of the Foote Brothers Gear & Machine Corp., Chicago, has been elected vice-president in charge of manufacturing. He has been associated with the company since 1928.

• **C. C. Hermann**, since 1937 sales engineer in charge of the Philadelphia office of the Claude B. Schneible Co., Chicago, has been appointed chief engineer. For many years Mr. Hermann was connected with the engineering department of Deere & Co., and later was plant engineer of the John Deere Tractor Co., Waterloo, Iowa.

• **Otto V. Gray**, assistant to the general superintendent of the Gary, Ind., sheet and tin mills of Carnegie-Illinois Steel Corp., retired Oct. 1 after 29 years in the steel industry in Gary and 15 years with companies now a part of United States Steel Corp. Gray entered the steel industry in 1896 with American Sheet & Tin Plate Co., Bridgeport, Ohio. On Jan. 1, 1929, Gray was appointed assistant manager of the Gary sheet mill and when the sheet and tin mills were combined in 1936, he received his last post, assistant to the general superintendent, held until his retirement.

• **L. H. Miller** has been selected to head the newly-formed liquid plastics division of Ferro Enamel Corp., Cleveland. He has been associated with Pittsburgh Plate Glass Co., at Milwaukee, for several years.

• **Fred T. Macrae, Jr.**, has been elected executive vice-president of the White Motor Co., Cleveland.



For five years he has been vice-president in charge of production.

• **M. D. Bensley** has been appointed assistant to the president of Shenango-Penn Mold Co. For 10 years he has covered the Pittsburgh sales territory for the company. **H. H. Zollar**, with the organization in various capacities in the plant and office since 1926, will replace Mr. Bensley in the Pittsburgh district.

• **Walter J. Kelly** has been appointed acting manager of the industrial relations department of the Tennessee Coal, Iron & Railroad Co., Birmingham, succeeding **J. F. Vance**, manager, who has retired, but will serve in an advisory capacity. Mr. Kelly has been with the company since 1923.

• **C. C. Mettler** recently completed 48 years of service with the American Bridge Co. and its predecessors. At present a member of the contracting department, Mettler started in 1892 with the Lassig Bridge Works, Chicago, which was later bought by the American Bridge Co.

• **James P. Quigley**, Olean, N. Y.; **Karl A. Stein**, Dayton; **Devan G. Smith**, New York, and **John L. Schmeller**, Cleveland, have been elected members of the board of the National Bronze & Aluminum Foundry Co., Cleveland. New officers are **L. G. Smith**, vice-president, and **John L. Schmeller**, former sales manager, who is made vice-president in charge of sales and assistant treasurer. **John H. Schmeller, Sr.**, is president and

treasurer and **William Muth** is secretary.

• **Philip D. Block, Jr.**, assistant vice-president, Inland Steel Co., is chairman of the Steel and Iron Division in the 1940 Community Fund of Chicago Campaign. The entire campaign seeks this year to raise \$3,604,000 for charity.

• **Edward G. Walker**, assistant general purchasing agent, Santa Fe Railway, Chicago, will retire Oct. 31 after 37 years in the Santa Fe's store department. On Oct. 1, **William S. Riach** assumed the post to be vacated by Mr. Walker. Starting with the Santa Fe in 1903 at Albuquerque, N. M., Mr. Walker was later transferred to the road's office in Topeka, Kan., going to Chicago in 1926. Mr. Riach also joined the Santa Fe in 1903 in Topeka and was promoted to chief clerk in 1918, holding that position until this latest appointment.

• **Edward Walters** has been transferred from the Chicago office of the Harnischfeger Corp. to the firm's headquarters in Milwaukee where he will be assistant sales manager of the welder and electrode division.

• **William W. Calihan**, former district manager at Rochester, N. Y., for H. K. Porter Co., Inc., has been transferred to Pittsburgh to handle sales of the process equipment division.

• **C. T. Hill** has been elected president of the Pyrites Co., Inc., Wilmington, Del., succeeding the late **J. H. Saville**.

• **A. D. Lynch**, formerly personnel director of the J. I. Case Co., has been appointed to a similar post with the Young Radiator Co., Racine, Wis.

• **H. J. Barton**, who has been associated with steel activities on the Pacific Coast for many years, specializing in the sale of tool, alloy and special steels in the oil tool and aviation industries, has been appointed to the tool steel division, in the Southern California territory, by Allegheny Ludlum Steel Corp., Pittsburgh. He was formerly an official and sales manager of the Earle M. Jorgesen Co. for 15 years.

September Iron Output Approaches 1929 Peak

PRODUCTION of coke pig iron in September totaled 4,176,527 net tons, compared with 4,238,041 tons in August. On a daily basis, at 139,218 tons, output came within 1.2 per cent of the record output reached in May, 1929, when it was 140,834 tons. The gain over the August rate was 1.8 per cent, or from 136,711 tons to 139,218 tons in September. The operating rate for the industry was 92.2 per cent of capacity, against 90.4 per cent in August.

Output Totaled 4,176,527 Tons in Sept. Operating Rate at 92.2% of Capacity

There were 193 furnaces in blast on Oct. 1, operating at the rate of 140,620 tons a day, compared with 190 on Sept. 1, making 137,500

tons. Four furnaces were blown in during the month, and one was blown out. The United States Steel Corp. blew in one furnace, independent producers blew one in and took one off blast, and a merchant producer put two in blast.

Among the furnaces blown in were: One Midland, Pittsburgh Crucible Steel Co.; one Mingo, Carnegie-Illinois Steel Corp., and two Federal, Interlake Iron Corp.

The Bethlehem Steel Co. blew out "D" furnace at its Bethlehem plant.

Production by Districts and Coke Furnaces in Blast (All Figures in Net Tons)

FURNACES	(All Figures in Net Tons)			Oct. 1, 1940		Sept. 1, 1940	
	Sept., 1940	August, 1940	Sept., 1939	Number in Blast	Operating Rate, Net Tons a Day	Number in Blast	Operating Rate, Net Tons a Day
New York:							
Buffalo	267,033	279,994	225,637	12	8,900	12	9,070
Other New York and Mass.	33,964	37,227	16,059	2	1,130	2	1,200
Pennsylvania:							
Lehigh Valley ...	99,018	97,153	66,428	5	3,075	6	3,510
Spiegeleisen	4,631	4,285	4,807	1	155	1	140
Schuylkill Valley.	43,116	45,342	31,151	3	1,435	3	1,465
Susquehanna and Lebanon Valleys ..	46,489	47,322	13,653	2	1,550	2	1,525
Ferromanganese ..	2,972	3,022	.....	1	100	1	95
Pittsburgh District ..	874,763	903,340	682,194	38	29,660	38	29,140
Ferro. and Spiegel ..	17,601	11,856	7,730	3	585	2	380
Shenango Valley.	77,949	78,978	29,534	4	2,600	4	2,550
Western Penna.	117,026	119,230	85,278	6	3,900	6	3,845
Ferro. and Spiegel ..	12,451	13,949	14,130	1	415	1	450
Maryland	196,348	195,441	190,790	6	6,545	6	6,305
Wheeling District ..	166,924	156,502	151,276	8	6,130	7	5,340
Ohio:							
Mahoning Valley.	445,032	456,598	325,489	18	14,835	18	14,730
Central and Northern	361,349	366,759	311,723	16	12,045	16	11,855
Southern	50,309	56,567	51,052	4	1,675	4	1,715
Illinois and Indiana ..	857,234	860,367	591,303	33	29,140	31	27,955
Michigan and Minnesota ..	119,924	124,790	108,771	6	3,995	6	4,025
Colorado, Missouri and Utah	56,503	45,263	37,712	4	1,885	3	1,460
Ferromanganese .....	.....	4,407	.....	0	.....	1	140
The South:							
Virginia .....	.....	.....	.....	0	.....	0	.....
Ferromanganese .....	.....	.....	3,091	0	.....	0	.....
Kentucky	27,865	29,643	29,784	2	930	2	955
Alabama	298,026	296,237	243,292	18	9,935	17	9,555
Ferro. and Spiegel .....	.....	2,888	3,099	0	.....	1	95
Tennessee .....	.....	811	.....	0	.....	0	.....
Total	4,176,527	4,238,041	3,223,983	193	140,620	190	137,500

Production of Coke Pig Iron and Ferromanganese

(All Figures in Net Tons)

	Pig Iron*		Ferro-manganese†	
	1940	1939	1940	1939
January ..	4,032,022	2,436,474	43,240	23,302
February ..	3,311,480	2,307,409	38,720	20,894
March ..	3,270,499	2,681,969	46,260	17,928
April ..	3,137,019	2,302,918	43,384	12,900
May ..	3,513,683	1,923,618	44,973	8,835
June ..	3,818,897	2,372,665	44,631	18,611
½ year ..	21,083,600	14,025,053	261,208	102,470
July ..	4,053,945	2,639,022	43,341	23,758
August ..	4,238,041	2,978,991	37,003	23,103
September ..	4,176,527	3,223,983	33,024	24,583
October ..	.....	4,062,901	.....	26,817
November ..	.....	4,166,888	.....	33,999
December ..	.....	4,220,536	.....	40,654
Year ..	.....	35,317,374	.....	275,384

*These totals do not include charcoal pig iron. †Included in pig iron figures.

Daily Average Production of Coke Pig Iron

	1940	% Capacity	1939	% Capacity	1938
January ..	130,061	85.8	78,596	51.5	51,632
February ..	114,189	75.1	82,407	54.0	51,931
March ..	105,500	68.9	86,516	56.8	52,476
April ..	104,567	68.6	76,764	50.4	51,376
May ..	113,345	74.8	62,052	40.8	45,343
June ..	127,297	83.9	79,089	51.7	39,648
½ year ..	115,844	76.1	77,486	.....	48,717
July ..	130,772	86.3	85,130	55.8	43,417
August ..	136,711	90.4	96,096	62.9	53,976
September ..	139,218	92.2	107,466	70.4	62,737
October ..	.....	.....	131,061	85.9	74,147
November ..	.....	.....	138,877	90.9	84,746
December ..	.....	.....	136,146	89.4	79,872
Year ..	.....	.....	96,760	.....	57,633

Merchant Iron Made, Daily Rate

	1940	1939	1938	1937	1936
January ..	16,475	11,875	11,911	18,039	11,801
February ..	14,773	10,793	9,916	18,496	12,652
March ..	11,760	10,025	9,547	18,432	12,131
April ..	13,656	9,529	9,266	16,259	15,565
May ..	16,521	7,883	7,203	21,821	14,352
June ..	13,662	8,527	6,020	17,774	15,914
July ..	16,619	9,404	6,154	21,962	13,013
August ..	17,395	11,225	7,408	19,971	13,606
September ..	17,571	12,648	12,550	22,473	14,029
October ..	.....	16,409	12,095	21,224	15,282
November ..	.....	16,642	14,793	17,541	16,508
December ..	.....	16,912	10,226	12,280	16,634

The Iron Age Comparison of Prices

Advances Over Past Week in Heavy Type; Declines in Italics

	Oct. 8 1940	Oct. 1 1940	Sept. 10 1940	Oct. 10 1939
Flat Rolled Steel: (Cents Per Lb.)				
Hot rolled sheets.....	2.10	2.10	2.10	2.00
Cold rolled sheets.....	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.50	3.50	3.50	3.50
Hot rolled strip.....	2.10	2.10	2.10	2.00
Cold rolled strip.....	2.80	2.80	2.80	2.80
Plates.....	2.10	2.10	2.10	2.10
Tin and Terne Plate: (Dollars Per Base Box)				
Tin plate.....	\$5.00	\$5.00	\$5.00	\$5.00
Manufacturing ternes ...	4.30	4.30	4.30	4.30
Bars and Shapes: (Cents Per Lb.)				
Merchant bars.....	2.15	2.15	2.15	2.15
Cold finished bars.....	2.65	2.65	2.65	2.65
Alloy bars.....	2.70	2.70	2.70	2.70
Structural shapes.....	2.10	2.10	2.10	2.10
Wire and Wire Products: (Cents Per Lb.)				
Plain wire.....	2.60	2.60	2.60	2.60
Wire nails.....	2.55	2.55	2.55	2.55
Rails: (Dollars Per Gross Ton)				
Heavy rails.....	\$40.00	\$40.00	\$40.00	\$40.00
Light rails.....	40.00	40.00	40.00	40.00
Semi-Finished Steel: (Dollars Per Gross Ton)				
Rerolling billets.....	\$34.00	\$34.00	\$34.00	\$34.00
Sheet bars.....	34.00	34.00	34.00	34.00
Slabs.....	34.00	34.00	34.00	34.00
Forging billets.....	40.00	40.00	40.00	40.00
Wire Rods and Skelp: (Cents Per Lb.)				
Wire rods.....	2.00	2.00	2.00	1.92
Skelp (grvd).....	1.90	1.90	1.90	1.90

	Oct. 8 1940	Oct. 1 1940	Sept. 10 1940	Oct. 10 1939
Pig Iron: (Per Gross Ton)				
No. 2 fdy., Philadelphia..	\$24.84	\$24.84	\$24.84	\$24.84
No. 2, Valley furnace....	23.00	23.00	23.00	23.00
No. 2, Southern Cin'ti....	23.06	23.06	23.06	23.06
No. 2, Birmingham.....	19.38	19.38	19.38	19.38
No. 2, foundry Chicago†.	23.00	23.00	23.00	23.00
Basic, del'd eastern Pa....	24.34	24.34	24.34	24.34
Basic, Valley furnace....	22.50	22.50	22.50	22.50
Malleable, Chicago†.....	23.00	23.00	23.00	23.00
Malleable, Valley.....	23.00	23.00	23.00	23.00
L. S. chracoal, Chicago...	30.34	30.34	30.34	30.34
Ferromanganese†.....	120.00	120.00	120.00	100.00

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton. ‡For carlots at seaboard.

	Oct. 8 1940	Oct. 1 1940	Sept. 10 1940	Oct. 10 1939
Scrap: (Per Gross Ton)				
Heavy melting steel, P'gh.	\$21.50	\$21.25	\$20.25	\$23.50
Heavy melt'g steel, Phila.	20.625	20.625	20.50	23.00
Heavy melt'g steel, Ch'go	19.75	19.75	19.00	19.75
Carwheels, Chicago.....	20.25	20.25	19.75	18.00
Carwheels, Philadelphia..	22.75	22.75	22.25	22.25
No. 1 cast, Pittsburgh...	20.25	20.25	20.25	22.75
No. 1 cast, Philadelphia..	22.25	22.25	22.25	24.75
No. 1 cast, Ch'go (net ton)	17.75	17.75	17.25	17.25

	Oct. 8 1940	Oct. 1 1940	Sept. 10 1940	Oct. 10 1939
Coke, Connellsville: (Per Net Ton at Oven)				
Furnace coke, prompt....	\$4.75	\$4.75	\$4.75	\$4.75
Foundry coke, prompt....	5.25	5.25	5.25	5.50

	Oct. 8 1940	Oct. 1 1940	Sept. 10 1940	Oct. 10 1939
Non-Ferrous Metals: (Cents per Lb. to Large Buyers)				
Copper, electro., Conn.*..	12.00	12.00	11.50	12.50
Copper, Lake, New York.	12.00	12.00	11.50	12.50
Tin (Straits), New York.	51.00	51.50	50.05	55.00
Zinc, East St. Louis.....	7.25	7.25	6.85	6.50
Lead, St. Louis.....	4.85	4.85	4.75	5.35
Antimony (Asiatic), N. Y.	16.50	16.50	16.50	14.00

* Mine producers only.

The various basing points for finished and semi-finished steel are listed in the detailed price tables, pages 149 to 158 herein. On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Composite Prices . . .

FINISHED STEEL				PIG IRON				SCRAP STEEL			
Oct. 8, 1940.....	2.261c.	a Lb.....	.....	\$22.61	a Gross Ton.....	.....	\$20.62	a Gross Ton.....	.....	.....	.....
One week ago.....	2.261c.	a Lb.....	.....	\$22.61	a Gross Ton.....	.....	\$20.54	a Gross Ton.....	.....	.....	.....
One month ago.....	2.261c.	a Lb.....	.....	\$22.61	a Gross Ton.....	.....	\$19.92	a Gross Ton.....	.....	.....	.....
One year ago.....	2.236c.	a Lb.....	.....	\$22.61	a Gross Ton.....	.....	\$22.08	a Gross Ton.....	.....	.....	.....
High				High				High			
1940.....	2.261c., Jan.	2	2.211c., Apr. 16	.....	.....	.....	.....	.....	.....	.....	.....
1939.....	2.286c., Jan.	3	2.236c., May 16	\$22.61, Sept. 19	\$20.61, Sept. 12	.....	22.50, Oct. 3	\$16.04, Apr. 9	.....	.....	.....
1938.....	2.512c., May 17	2.211c., Oct. 18	.....	23.25, June 21	19.61, July 6	.....	15.00, Nov. 22	11.00, June 7	.....	.....	.....
1937.....	2.512c., Mar. 9	2.249c., Jan. 4	.....	23.25, Mar. 9	20.25, Feb. 16	.....	21.92, Mar. 30	12.92, Nov. 10	.....	.....	.....
1936.....	2.249c., Dec. 28	2.016c., Mar. 10	.....	19.73, Nov. 24	18.73, Aug. 11	.....	17.75, Dec. 21	12.67, June 9	.....	.....	.....
1935.....	2.062c., Oct. 1	2.056c., Jan. 8	.....	18.84, Nov. 5	17.83, May 14	.....	13.42, Dec. 10	10.33, Apr. 29	.....	.....	.....
1934.....	2.118c., Apr. 24	1.945c., Jan. 2	.....	17.90, May 1	16.90, Jan. 27	.....	13.00, Mar. 13	9.50, Sept. 25	.....	.....	.....
1933.....	1.953c., Oct. 3	1.792c., May 2	.....	16.90, Dec. 5	13.56, Jan. 3	.....	12.25, Aug. 8	6.75, Jan. 3	.....	.....	.....
1932.....	1.915c., Sept. 6	1.870c., Mar. 15	.....	14.81, Jan. 5	13.56, Dec. 6	.....	8.50, Jan. 12	6.43, July 5	.....	.....	.....
1931.....	1.981c., Jan. 13	1.883c., Dec. 29	.....	15.90, Jan. 6	14.79, Dec. 15	.....	11.33, Jan. 6	8.50, Dec. 29	.....	.....	.....
1930.....	2.192c., Jan. 7	1.962c., Dec. 9	.....	18.21, Jan. 7	15.90, Dec. 16	.....	15.00, Feb. 18	11.25, Dec. 9	.....	.....	.....
1929.....	2.236c., May 28	2.192c., Oct. 29	.....	18.71, May 14	18.21, Dec. 17	.....	17.58, Jan. 29	14.08, Dec. 3	.....	.....	.....
Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.				Based on average for basic iron at Valley furnace and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.				Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.			

Summary of the Week

REFLECTING increased steel orders for defense purposes, for automobile manufacturing, for railroad equipment and for a wide range of miscellaneous industries, steel ingot production has risen a point or more to a shade above 94 per cent of capacity, and indications point strongly to the probability that this rate will be held or bettered over the remainder of the year.

The current rate approximately equals the peak operation of 1939, which was attained in November. Maintenance of this rate to the end of December would insure a total output for the year of about 65,000,000 net tons of ingots, substantially exceeding the previous record of 62,032,445 net tons of open hearth and Bessemer ingots in 1929.

Pig iron output is likewise approaching the 1929 peak. Last month's output, on a daily basis of 139,218 net tons, came within 1.2 per cent of equaling the all-time high of 140,834 tons a day in May, 1929. There were 193 furnaces in blast on Oct. 1, a gain of three during the month. These furnaces were making iron at a rate of 140,620 tons a day, indicating that the 1929 record may be equaled or exceeded this month.

ANOTHER indication of the rising trend of industrial production is THE IRON AGE capital goods index, which, rising for the eighth consecutive week, is now at 107.9, the high point for the 11-year period since 1929.

With the single exception of tin plate, which is dull and likely to continue so for some time because of large inventories and small food packs, every branch of the steel industry is experiencing expanding activity. Pressure is greatest for semi-finished steel, bars, shapes and plates and electric furnace steel, but is increasing in sheets, strip, wire products, pipe, rails and track accessories. An example of the pressure for forging billets is the fact that 12 companies which have received U. S. Army contracts for 155 mm. and 105 mm. shells will require a total of 268,000 net tons of steel. Not included in this list is 20,000 tons just placed by a New York company and about 50,000 tons that is pending for British shell contracts. The American Car & Foundry Co. has received a new order for 3090 light tanks for the Army, which will take 10,000 tons of armor plate and a like quantity of ordinary carbon steel.

Despite the extent to which some mills are being pressed for deliveries, only self-imposed priorities have been necessary thus far, a condition which may continue provided manufacturers of non-essential products do not attempt to crowd the mills with orders beyond reasonable requirements. Steel companies regard a three-months' inventory as ample protection for consumers, and they are trying to discourage too great a concentration of orders, which would merely com-

•Increasing steel orders shove production rate for industry up to 94 per cent . . . Pig iron output approaching 1929 peak . . . All steel products, except tin plate, experiencing expanding activity . . . Formal priority system may be required in machine tools to end confusion.

plicate the problem of satisfying all needs. However, for the first time since 1937 a large number of buyers are flocking to mill districts to arrange for future deliveries.

Should steel priorities eventually become necessary, the Army and Navy Munitions Board has set up machinery through the adoption of a steel mobilization plan, under which studies of steel capacity and specific military requirements in certain lines are being made.

IN the machine tool industry the use of voluntary priorities has brought about a badly confused situation, arising from the fact that virtually all defense projects have been given an A-1 rating. So much business has been placed in this classification that a sequence for the most essential requirements may have to be arranged by the Government in view of the fact that some orders are now taking a 1942 delivery date.

Concern over rising scrap prices and the possibility of a scrap shortage resulted in the calling of a meeting Tuesday by the National Defense Advisory Commission, which was attended by representatives of the steel and scrap industries. Neither the Government representatives, the steel men nor the scrap men favored price control in any form. The Government and the steel industry were assured by the scrap trade that under an orderly procedure there would be ample supplies of scrap. Meanwhile, under the threat of possible Government intervention, scrap markets were quieter this week and price rises less numerous. The Pittsburgh market is a little higher, resulting in an advance of 8c. in THE IRON AGE scrap composite price to \$20.62.

Coke prices are advancing. In three centers—Cleveland, Cincinnati and Boston—advances of 50c. a ton on by-product coke have been announced, and a similar advance may come in the Newark-Jersey City area.

Steel prices are steady and firm. Some weaknesses, such as in line pipe, merchant pipe and wire nails from warehouse stocks, are gradually being eliminated.

The Industrial Pace . . .

ACTIVITY IN THE DURABLE goods industries in the past week, as measured by THE IRON AGE index of capital goods activity, extended its upward movement for the eighth consecutive week, the combined index reaching 107.9, a new high point for the 11-year period since 1929. The week's advance was due almost entirely to another very active week in the heavy construction field, that component rising more than six points above the figure for the week previous. The Pittsburgh component was the only other factor to show a gain.

The heavy engineering construction index rose to a new peak for the interval since 1929, standing at 113.2 at the end of the past week, as compared with 106.5 two weeks ago, 95.4 a month ago, and 70.8 in the same week in 1939. Total value of awards placed was \$94,181,000. Private building has become of increasing importance as industries expand to meet national defense requirements. Private awards rose to \$31,921,000 from \$28,493,000 in the preceding week, while public contracts fell from \$73,684,000 to \$62,260,000. Private construction for the first 40 weeks of 1940 is 23 per cent above the corresponding period last year, while a large increase in federal

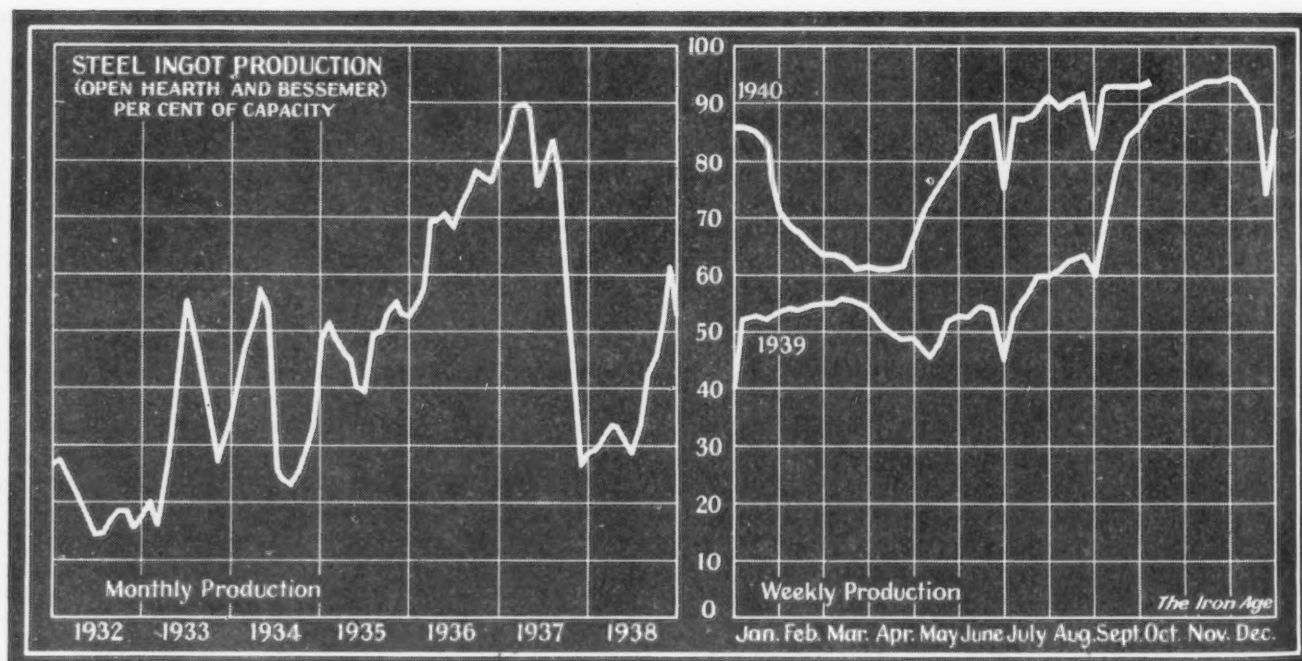
work is responsible for an 8 per cent gain in public awards during the same period.

FOR THE FIRST time in eight weeks the automobile series failed to show a gain, as a high seasonal correction modified increased output. The index of this component for the past week was 108.6, as compared with 108.9 in the previous week and 59.9 a month ago. Production during the week was 105,153 units, a gain of 9163 cars over the preceding week.

Rising sharply in August for the fifth consecutive month, manufacturers' new orders were 52 per cent above the year's low point occurring in March, and 11 points higher than July. The index for August is 141, comparing with 130 in July, 117 in June, and 96 in August, 1939. A greater proportion of the bookings were of government origin in August, although they have not yet attained the volume that is expected in September.

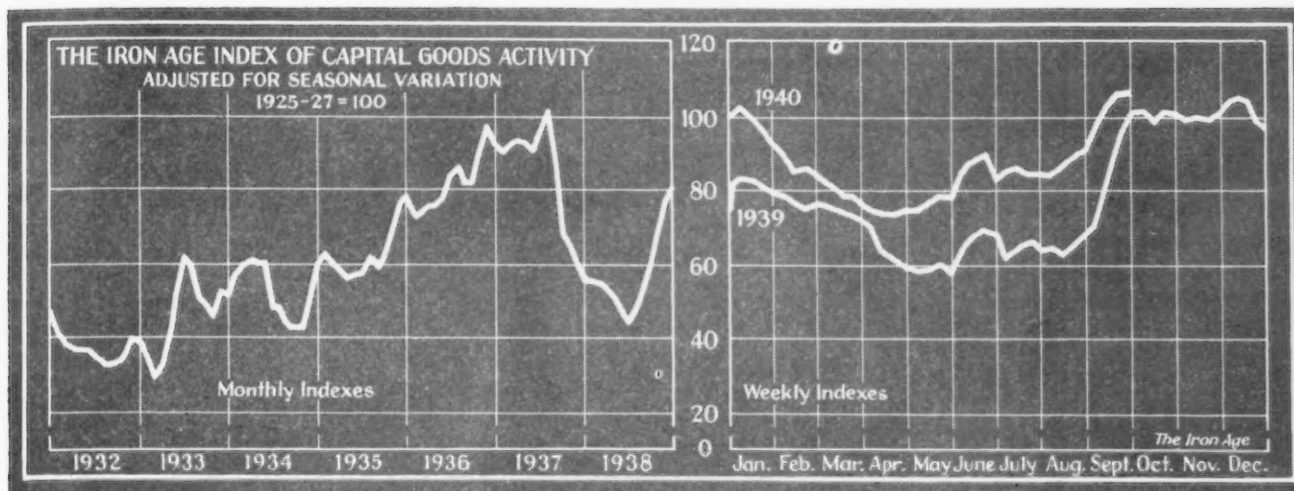
Inventories, up slightly from July, registered a fourth successive monthly gain which, however, was at a decreased rate from that of July. This index for August stood at 133.5, as compared with 133.2 in July, and 110.5 in August, 1939.

Ingot Rate Rises to 94%, New 1940 High



District Ingot		Pitts-	Chicago	Valleys	Phila-	Cleve-	Buffalo	Wheel-	Detroit	Southern	S. Ohio	West-	St. Louis	East-	Aggre-
Production, Per		burgh			delphia	land		ing			River	ern		ern	gate
Cent of Capacity															
Current Week ..		90.0	97.5	92.0	94.0	88.0	104.5	104.0	95.6	105.0	105.0	72.0	96.5	77.0	94.0
Previous Week ..		89.0	97.5	87.0	93.0	88.0	104.5	104.0	94.0	105.0	105.0	69.0	96.5	76.0	93.0

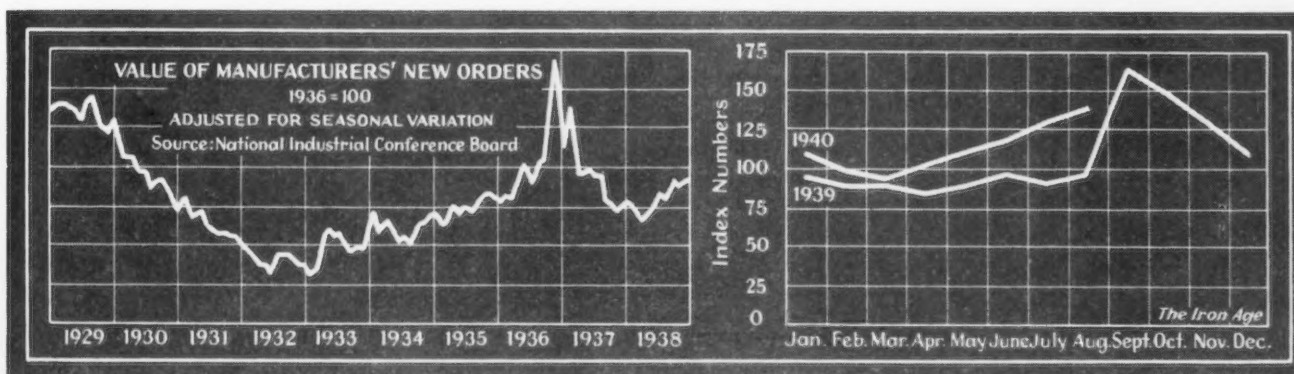
Rate of Advance of Capital Goods Index Moderates



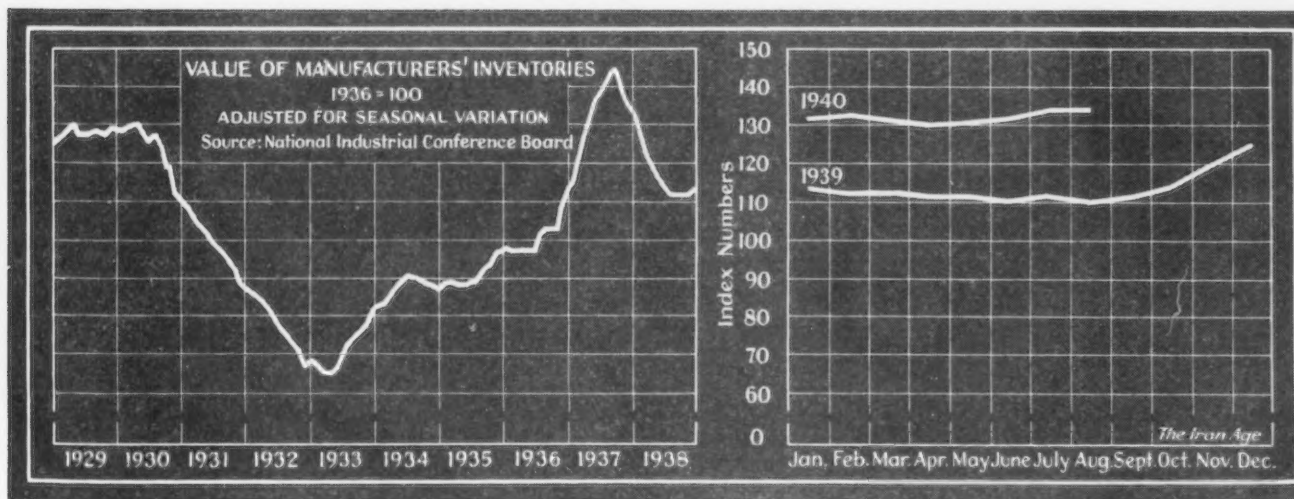
Component	Week Ended	Oct. 5	Sept. 28	Sept. 7	Oct. 7	Oct. 5
Steel ingot production ¹		132.5	133.5	123.8	124.0	117.5
Automobile production ²		108.6	108.9	59.9	142.1	106.5
Construction contracts ³		113.2	106.5	95.4	70.8	109.7
Forest products carloadings ⁴		73.1	73.3	68.9	66.6	113.2
Pittsburgh output and shipments ⁵		111.9	111.4	112.8	102.3	118.4
COMBINED INDEX		107.9	106.7	92.2	101.1	113.1

Sources: ¹THE IRON AGE; ²Wards Automotive Reports; ³Engineering News-Record; ⁴Association of American Railroads; ⁵University of Pittsburgh. Indexes of forest products carloadings and activity in Pittsburgh area reflect conditions as of week ended Sept. 28. Other indexes cover week of Oct. 10.

Manufacturers' Orders in August 8 Per Cent Above July



August Inventories Show Little Change



Market News

...THE WEEK'S ACTIVITIES IN IRON AND STEEL

New Business

... Orders are generally ahead of September average

Aggregate orders taken so far this month by one of the leading steel producers at CLEVELAND are about 15 per cent ahead of production capacity and exceeding the volume booked in the corresponding part of September. The CLEVELAND district sales office of another steel company reports its daily average of new tonnage in recent weeks is more than a thousand tons above the daily average in the early part of this year.

Sales of construction steel in particular are very heavy and delivery promises on this class of material are becoming more extended every day. In order to proceed without delay several CLEVELAND constructors have found it advisable to buy steel from warehouses.

The heavy demand for electric furnace alloy steel continues unabated. Capacity of one Ohio producer is sold out for the remainder of this year, despite the fact many recent inquiries have been diverted into open hearth alloy steel. Government experts are showing willingness to cooperate with steel producers in many cases where it is found difficult to meet physical requirements or tolerances, and where diversion can be accomplished successfully.

Meanwhile, diversified peace time manufacturers in the CLEVELAND area are advancing their production schedules. One refrigerator maker has increased output from 10,000 to 12,000 units per month. Manufacturers of road building equipment are very active.

CLEVELAND reports a further tendency on the part of most consumers to anticipate their future requirements.

The past week has seen a moderate expansion in overall steel buying in the PITTSBURGH district. The improvement recently has been in sufficient volume to make up for the slight falling off in export demand. Significant has been the mild but nevertheless relatively active in-

crease in sheet sales. Although most of the latter increase has been due to automotive support, there has been a definite broadening in the base of consumer sheet purchases.

For the first time since 1937 PITTSBURGH mills have received visitors from steel consuming plants whose main object has been to talk about deliveries, both present and future, and this condition may have some implication as to the future trend of general steel buying. With deliveries becoming more extended, there is a greater realization on the part of some steel buyers that their own steel inventories are not at a level sufficiently high to take care of unexpected situations which may come about because of national defense projects.

New business at CHICAGO for first week of the month was considerably better than in the previous week, and in some cases as much as two and a half times higher than the first week in September. While steel business in that district is not up to levels in the Eastern sector, CHICAGO mills note a slight trend toward future buying. That this is by no means widespread is shown by the fact that deliveries are still very creditable on most items. Only bars and plates, which have been most active, have lengthened out to a point beyond six weeks delivery and some mills can fill orders for these products in four weeks.

Steelmakers in CHICAGO believe that the industry's capacity can meet all defense needs so long as buying can be kept orderly. A number of the requests for reservations on future rolling schedules are nothing more than that. Specifications are so indefinite that mills cannot plan very far ahead on them. Backlogs in that district are not abnormal in any sense.

Carbon and alloy bars and billets continue as CHICAGO's leaders in demand. Heat-treated and annealed alloy products are generally booked through December. Auto parts manufacturers, forgers, railroads, implement builders are among the most active buyers, with forgers booked close to capacity for several

months. Past week saw a small decline in semi-finished and structural steel business.

New bookings in the PHILADELPHIA area during the past week veered up sharply from the average level of September business. Plate demand was heavier as a result of railroad and miscellaneous buying, shape deliveries became more extended as orders continued to flow in, while the sheet market saw definite improvement.

E. I. DuPont De Nemours Co. has tentatively placed an order for 250,000 to 400,000 40-lb. powder cans, requiring 5000 to 8000 tons of sheets.

Rail orders feature new business in the BIRMINGHAM district, with backlogs exceeding 60,000 tons. Plate mills continue to feel heavy demand from shipbuilding activity at Mobile and other shipbuilding points.

Prices

... A stiffening of quotations on some weak items

Mill prices are probably firmer than at any time since last fall and the sheet price structure particularly has had representative testing in the past two weeks. A sidelight on the price situation has been the withdrawing of all quotations on steel products made from rail steel by one of the leading rail steel producers. High raw material costs have been cited as the reason for this action and there is a possibility that rail steel merchant and concrete reinforcing bars as well as small shapes may be advanced to a price parity with new billet merchant bars and shapes and reinforcing bars. For the present, at least, this rail steel maker is quoting prices on application.

Preferential prices on line pipe have been withdrawn by some makers, and there has also been a stiffening of quotations on merchant pipe by distributors in various cities. The resale pipe situation has been a sore spot in the industry for many years. Quotations by jobbers in the New York district recently

have amounted to as much as 27½ per cent below the official carload price. Wire nail prices, as quoted by warehouses, have also been weak. Some of the jobbers' bids on nails for Army cantonments have been below the current mill quotations.

Steel Operations

... Ingot production for country rises to a shade above 94 per cent

Steel ingot production, after remaining almost stationary for the industry as a whole for three weeks, has risen a point or more to a shade above 94 per cent for the current week. In a number of districts there has been no change from last week, while in others there have been advances in average activity. In no district has there been a decline. Among the districts to attain a higher level of activity are Pittsburgh, up one point to 90 per cent; Youngstown, up five points to 92 per cent; Eastern Pennsylvania, up one point to 94 per cent; Detroit, up 1.6 points to 95.6 per cent.

Pig Iron

... Orders and shipments continue to expand

Pig iron orders and shipments at PITTSBURGH continue to expand, and stocks at pig iron makers' plants are diminishing. Merchant pig iron consumers in the PITTSBURGH district have expanded their activity considerably in the past few months, and this betterment has extended to jobbing foundries. Consumers with regular sources of supply are not unduly apprehensive about the future, but customers who have not established such sources might find it difficult to obtain pig iron late this year or early next year.

At CHICAGO, pig iron shipments for September were higher than any month since October, 1939. Shipments early part this month continue to rise. Recent price advance has stabilized market and there is no abnormal inventory buying, since most consumers are well covered, anyway.

The first five days of October at CLEVELAND found shipments actually increasing over the high rate

which prevailed in late September. Practically all consumers have stepped up their shipping releases in recent weeks.

Shipments of pig iron to melters in the ST. LOUIS area continue to increase and are considerably above the corresponding period of last month.

Commitments have been increased moderately in the PHILADELPHIA district, and buyers are now pretty well covered for the remainder of the year. Shipments are considerably in excess of a month ago.

While the melt in the SOUTHERN OHIO district has not changed, melters are in the market more frequently for spot orders.

A further increase in buying and shipping instructions is noted in NEW ENGLAND, where the market is more active than in months.

BUFFALO production of pig iron holds at capacity. One producer is drawing heavily from its reserve stocks to meet releases.

Merchant iron shipments at BIRMINGHAM remain steady with all 18 of the district's furnaces in blast. Pig iron production there has been at capacity for weeks.

Coke

... By-product prices up 50c. at Boston, Cincinnati, Cleveland

By-product foundry coke has been advanced 50c. a ton at Boston, Cincinnati and Cleveland. A similar advance is expected shortly in the Newark-Jersey City, N. J., area, but no action had been taken at time of going to press. Prior to the increase, there was a mild rush by foundries to cover last quarter fuel requirements.

Wire Products

... Orders increase steadily, aided by defense business

Total wire sales at PITTSBURGH continue to increase steadily with new business and releases on wire rods and manufacturers' wire somewhat ahead of a month ago. As a matter of fact, wire rod capacity is fairly well booked up for the rest of the year and deliveries on manufacturers' wire are becoming extended. Merchant wire products demand is also expanding, notably wire nails.

At CLEVELAND, demand for manufacturers' wire from the bedding and automobile industries is more active, and defense requirements are gaining. Cantonment projects have given the merchants' wire market brisk activity and will continue to supply impetus.

One mill at CHICAGO reports its spring wire sold out for the rest of the quarter, while all wire business holds to a strong level.

Approximately one-third of the \$2,000,000 wire order placed by the U. S. Signal Corps with the General Cable Corp. will be fabricated in the Buffalo plant. Wire screens for sizing powder at the big explosive plants under construction in the South are being produced by the Buffalo Wire Works.

Semi-Finished Steel

... Shell billets adding to other large requirements

The large demand for shell billets, which is being superimposed on other requirements for semi-finished steel, promises to run into the hundreds of thousands of tons. For 155 mm. shell forgings, the following companies will require a total of 223,000 net tons of billets: Colorado Fuel & Iron Corp., Bethlehem Steel Co., American Car & Foundry Co., J. I. Case Co., National Tube Co. and Tennessee Coal, Iron & Railroad Co. For 105 mm. shells, the following companies will require a total of 45,654 tons: Pressed Steel Car Co., General Motors Corp., Pullman Standard Car Mfg. Corp., National Tube Co., National Supply Co., Pennsylvania Forge Co. These shell contracts are all for the U. S. Army.

Export demand, especially from the British, is fairly heavy while some large integrated mills continue in a position where they could use more material for their own finishing departments if such were obtainable at a price satisfactory to them.

Steel makers' stocks of semi-finished at CLEVELAND are reported to be in better balance now than was the case one month ago, but still some finishing mills are hampered by occasional shortages periodically. CLEVELAND producers are virtually out of the market on re-rolling billets.

Tubular Goods

... Orders for merchant pipe continue to expand

Tubular goods sales at PITTSBURGH in the past week compared favorably with the volume booked in the previous week. No important changes are apparent in oil country goods demand, but orders for standard merchant pipe continue to expand.

Standard pipe orders at CLEVELAND and YOUNGSTOWN continue above normal, and prospects for future business are excellent. Tubular goods sellers expect other items to maintain the present sales level until at least Nov. 15. At CLEVELAND a large backlog, estimated to be around 10 weeks, is held on the new Dewey tube tapering machine at the Steel & Tubes plant.

Bids will be taken, Oct. 8 to 10,

for the Westover Field, Chicopee, Mass., aviation project on 43,300 ft. of 1 to 3-in. steel pipe.

Army cantonment work is helping the cast iron pipe foundries. As the result of an order for 1415 tons for the cantonment at Falmouth, Mass., and various other orders, the Everett, Mass., foundry of Warren Foundry & Pipe Corp. has gone on a five-day week as against four days formerly.

You'll Need These

Murchey

TOOLS

for Defense Production!

Some defense products have no counterpart in peacetime products, and their manufacture will require "educational orders."

But, screw threads are one elements common to both defense and peace products. To produce these threads Murchey offers time-tested collapsible taps and self-opening die heads so that no "education" will be needed to obtain ample and accurate thread production any time you want it.



TYPE "M"
COLLAPSIBLE TAP

TYPE "G"
SELF
OPENING
DIE
HEAD

THE MURCHEY MACHINE & TOOL CO.
951 Porter Street Detroit, Michigan

Murchey for all types of collapsible taps, self-opening die heads, bolt and pipe threading machines, and chaser grinders.

Sheets and Strip

... Bookings are expanding and some backlogs are being built up

Sheet and strip bookings at PITTSBURGH have expanded moderately, a major portion of the support emanating from automobile centers. It was noted again last week that miscellaneous buyers of sheets and strip have increased in number, part of this condition being due to seasonal requirements, but some of it is due to apprehension on the part of consumers who had not been maintaining inventories which they considered sufficient in light of present day events. As has been the case for several weeks, demand for hot rolled sheets is in excess of cold rolled requirements.

U. S. Government has approved the use of galvanized sheets for roofing and siding in the building of cantonments. One drawback, however, may be the government specifications which require that the sheets must be roller coated and oven baked, a procedure which is likely to hold up delivery in case large tonnages of galvanized sheets are used in the building of cantonments. Soaring prices of lumber and tight supplies of the latter are said to have contributed to the approval of the use of sheets in building the cantonments.

CLEVELAND and YOUNGSTOWN report excellent sales activity in flat rolled products, including a surprisingly large number of frequent repeat purchases, individually moderate in size, from a wide range of industries. All producers at CLEVELAND and YOUNGSTOWN have tonnage for each week well beyond the earliest obtainable delivery promises. Tonnage for first quarter delivery is taken on the basis of price in effect at time of shipment.

With automotive buying picking up, sheet business at CHICAGO holds its healthy pace.

Sheet bookings in the SOUTHERN OHIO market continue to exceed mill capacity, and backlogs are building rapidly. A considerable amount of business which is attributable to defense programs has been noted during the past week, chiefly through fabricators.

Railroad Buying

... 1550 freight cars and 30,000 tons of rails ordered

Freight cars purchased in the first nine months of this year total 40,553 cars, including those to be built in railroad shops, as compared with about 34,000 in the comparable period of 1939. Including awards made this week, 1940 car purchases now stand at 42,073 cars.

The past week's activity in the railroad market included the purchase of 1550 freight cars and 30,000 tons of rails. The rails were purchased by Southern and awarded to Tennessee Coal, Iron & Railroad Co.

Wheeling & Lake Erie Railroad has purchased 300 box cars from Pullman Standard Car Mfg. Co. and 200 box cars from American Car & Foundry Co. Baltimore & Ohio has awarded 750 gondolas to American Car & Foundry Co. and 250 gondolas to the Bethlehem Steel Co. Chicago, Indianapolis & Louisville has placed 20 ballast cars with American Car & Foundry Co.

Detroit, Toledo & Ironton is inquiring for 300 50-ton gondolas and Northern Pacific is taking bids on 500 to 2000 box cars. Erie is asking bids on 1270 cars of the following description: 250 gondolas, 300 box, 500 hopper, 100 automobile, 50 flat cars and 70 cabooses. These cars are in addition to 325 mill type gondolas now being built in the road's Dunmore, Pa., shops.

A study of the allocation of the 40,553 freight cars ordered during the first nine months of this year discloses the following: Railroad companies' own shops, 13,305; Pullman Standard Car Mfg. Co., 8730; American Car & Foundry Co., 5271; Pressed Steel Car Co., 3730; General American Transportation Corp., 2896; Bethlehem Steel Co., 2125; Ralston Steel Car Co., 1000; Virginia Bridge Co., 1000;

Mt. Vernon Car Mfg. Co., 1630; Greenville Steel Car Co., 612; Magor Car Corp., 145, and miscellaneous car builders, 109.

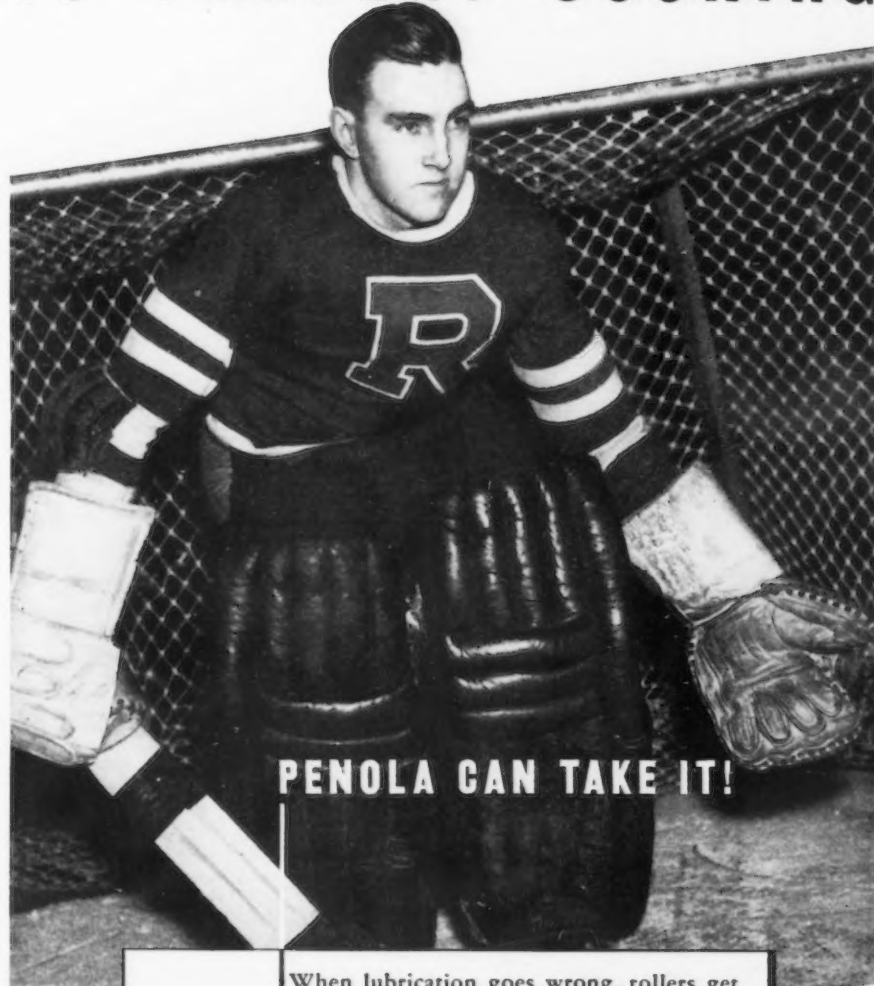
The 71,000-ton rail order of the New York Central has been divided among Bethlehem Steel Co., Carnegie-Illinois Steel Corp., Inland Steel Co. and the Algoma Steel Corp. of Canada.

Merchant Bars

... Demand at a high level, deliveries extended

Hot rolled bar sales, including demand for U. S. government and export munitions, continue at a relatively high level. Deliveries have been further extended. Support from the automotive industry has

TO PREVENT SCORING



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LUBRICANTS FOR THE STEEL INDUSTRY SINCE 1885

been increasingly recently and the base is broadening as far as miscellaneous consumption is concerned.

Defense program is responsible for continued intense activity at CHICAGO in bars of all kinds. Deliveries range from four weeks to eight weeks, with all mills booked for October and some through early November. Orders for 230,000 army cots, out of a total order for 500,000 has been awarded to man-

ufacturers in the Chicago area, and the angle steel will be produced in that district.

Six weeks' delivery on hot rolled merchant bars in popular sizes remains about the average of promises in the CLEVELAND and YOUNGSTOWN areas. Backlogs in cold finished bars are increasing steadily. Inquiries on anti-aircraft shells hold promise of testing production capacity. The machinery field is

constantly stepping up its requirements.

Columbia Steel & Shafting Co. has reaffirmed the base price on cold finished alloy steel bars for fourth quarter delivery and has revised extras for alloy content in line with changes made recently on the hot rolled alloy bar card.

Structural Steel

... Awards total 39,400 tons, new projects 24,800

Fabricated structural steel awards totaled 39,400 tons in the past week (56,500 tons a week ago). Included in sizable lettings are 4325 tons for Atlantic Avenue improvements in Brooklyn for the Long Island Railroad Co.; 3800 tons at Front Royal, Va., for a state highway bridge; 3000 tons for buildings in South Chicago for the International Harvester Co.; 2700 tons for Air Corps hangars at Anchorage, Alaska; 2500 tons for a floating dry dock at Mare Island Navy Yard, Cal.; 2055 tons for Air Corps operations hangars at Mobile, Ala.; 1850 tons for the Packard Motor Car assembly and office building, Detroit; 1800 tons for the Bell Aircraft plant at Niagara Falls, N. Y.; 1570 tons at Camden, N. J., for a machine shop and extension to the press shop for the Camden Forge Co.; 1010 tons at Saginaw, Mich., for the Saginaw Steering Wheel division of General Motors Corp., and 1000 tons at Hawthorne, Cal., for the Northrop Aviation Co.

New structural steel projects are slightly lower at 24,800 tons. The largest new inquiries include 6000 tons at Cheektowage, N. Y., for the Curtiss Aeroplane division of the Curtiss-Wright Corp.; 5500 tons for buildings at Indiana for the Aluminum Co. of America, and 1400 tons for Navy air base hangars at Alameda, Cal.

Plates

... Bookings substantial ... several weeks' delay on wide material

Plate sales at PITTSBURGH during the past week were changed but little in volume from a week ago. Deliveries on wide plates are extended. No let-up in bookings or operations is expected for some time.

Orders and inquiries at CLEVELAND

Cincinnati

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Individual for rail heads and side heads. Feeds selectable by 64ths from 1/64" to 1" with a twist of the wrist. Feeds may be changed at any position or direction of table travel. Heads may be fed at either end of table stroke.

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DOUBLE BRONZE NUTS

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PLANERS • PLANER MILLERS • BORING MILLS

THE CINCINNATI PLANER CO.

CINCINNATI, OHIO

LAND continue to be very heavy. Defense program plus heavy rail business keeps plates among the product leaders in CHICAGO. Bookings were in substantially increased volume in the PHILADELPHIA district as demand emanated from more widely scattered sources.

Miscellaneous demand in the NEW YORK area continues to expand and bookings in that area thus far this month have been running slightly ahead of September. Delivery dates from independent eastern Pennsylvania producers are showing a tendency to lengthen with three to four weeks being the average delivery quoted at present. Export buying, exclusive of United Kingdom, was more active in the past week with South Africa and South America accounting for the bulk of the activity. Export prices are currently about \$1 above two weeks ago with 2.10c., f.a.s., commission included, ruling on most business. Japanese interests have issued two new inquiries involving a total of 1500 tons, mostly boiler plate.

Reinforcing Bars

... Rail steel bars may go higher owing to scrap cost

At least one maker of rail steel reinforcing bars has withdrawn quotations owing to the high cost of raw materials. Present contracts will be fulfilled but all new business is subject to a price on application. This condition has been brought about by an increase in the price of rerolling rails which are purchased from the railroads.

Reinforcing steel awards total 12,600 tons, compared with 5250 tons last week. The largest lettings are 3300 tons at Detroit for the St. James Herman Gardens housing project; 2500 tons for the Philadelphia Navy Yard; 2000 tons at Middle River, Md., for the Glenn L. Martin Airplane plant, and 1700 tons for the Norfolk Navy Yard, Norfolk, Va.

New reinforcing steel projects call for 8000 tons. The only inquiry of size is 2000 tons for the Ford Aircraft engine plant at Detroit.

Tin Plate

... Operations still on low basis and outlook poor

Tin plate operations this week, including both hot and cold reduction mills, continues at 41 per cent, unchanged from a week ago. Cold reduced tin plate facilities throughout the country are operating at approximately 55 per cent of capacity. There is undoubtedly considerable hot rolled tin plate capacity

included in official figures which will probably not be utilized for some time, if at all. Outlook for fresh tin plate business remains dull and, as observed last week, the situation is exceptionally beclouded as far as demand from the Far East is concerned. The outlook for domestic tin plate specifications is likewise poor for the immediate future owing to inventories in the hands of can makers as well as the ability to obtain prompt delivery.

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THE J. B. FORD SALES CO. SERVICE REPRESENTATIVES IN 88 CITIES
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Machine Tools

... SALES, INQUIRIES AND MARKET NEWS

Orders Swamp Dealers

New York

••• Dealers in this area have been literally swamped with orders in recent weeks and there is no let-up in sight as the defense program swings into stride. Aside from aircraft, one of the biggest programs to be released is the \$50,000,000 expansion program of General Electric Co., is already well underway. The amount of machine tools bought by aircraft plants in the vicinity is running into millions of dollars per week and was particularly heavy last week. One plant alone has bought close to 3000 machines in connection with its current tooling program, fourth in a series. Other defense contractors in diverse lines are also in the market, most of them with A-1 preference classifications. As a

result the delivery situation is becoming more confused daily. New orders are averaging three to four times current shipments and backlogs are soaring.

Backlogs Climb Rapidly

Cleveland

In the first week of October one leading producer here has sold the equivalent of one month's production, preponderantly defense business. In September this same firm sold 90 days' production and in August it booked 60 days' production.

Among recent business has been heavy buying for the manufacture of turbines and gun mounts at Erie, Pa. More than \$3,000,000 is believed involved in new machine tool equipment there, including 18 vertical boring mills, numerous

large lathes, planers and several horizontal boring mills. Thompson Products, Inc., Cleveland aircraft valve maker, covered on a long list of equipment recently. Three shell case contracts have been closed in northern Ohio and involve press equipment.

Shipments of the entire industry gained during September and are believed to be now at the rate of around \$450,000,000 per year. Recently talk has been heard that the industry may be called upon to ship \$750,000,000 worth in 1941.

Priorities a Vexing Problem

Cincinnati

••• With machine tool orders continuing to flow into the market in heavy volume, deliveries are becoming more and more of a problem to local manufacturers. In fact, virtually every purchaser is attempting to trace his operations in some manner to the defense program in order that he may demand priority. As one manufacturer put it, the tension will continue to increase until, in sheer self-defense, the industry will have to ask the government what to do with reference to these priority claims.

Plants are operating at practical capacity, the supply of skilled labor being the chief limiting factor at the moment. There are still some plants that could expand production, particularly on night forces if sufficient number of skilled men could be obtained. Learner programs and apprentice training are being pushed as much as possible.

Jam in Deliveries Seen

Chicago

••• Last week it was suggested that the surging increase of priorities in the machine tool industry bid fair to create a tangle in production schedules for manufacturers and in deliveries for consumers. This is now on the way to becoming an accomplished fact. With flow of priorities daily mounting—and practically all of them being A-1—the manufacturer will soon be wondering, "who does get the machine first?"

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Non-Ferrous Metals

... MARKET ACTIVITIES AND PRICE TRENDS

New York, Oct. 8—Sales volume in all non-ferrous metal markets, excepting tin, was very good during the past week. While no actual shortages of materials have as yet developed, buyers are following the supply situation very closely. One factor inspiring this attention is the low level to which slab zinc stocks have dropped, as revealed by the September statistics. The insistent demand from Britain, together with fast expanding domestic needs, has eliminated the possibility of any reduction in consumption for some time to come.

All prices are on a very firm foundation and, while market activity in some markets would suggest grounds for increases under normal conditions, it is felt that the attention which Washington has been directing toward the price situation in general will have a moderating effect on prices in general.

Copper sales were in good volume throughout the week, nearby positions now being fairly well sold out. Electrolytic prices continue steady and unchanged at 12.00c. per lb. delivered Valley.

Lead

Sales during the week were in good volume, being considerably in excess of the week before. Largest share of buying was for November delivery, bringing that month up to about 40 per cent sold. The present week opened unevenly, with some sellers reporting business in excess of intake while others reported only carload lot inquiries. Earlier estimates of domestic shipments for September have been revised upward and expectations now place the total in excess of 54,000 tons. Refined stocks are expected to take a rather sharp drop, although no difficulty in supplying consumer needs is foreseen.

Zinc

Shipments of slab zinc during September were well in excess of August, the September total being

66,824 tons, as compared with 64,065 tons in August. Production in September was 53,119 tons, as compared with 49,939 tons in the preceding month. Stocks at the end of September stood at 30,965 tons, a drop of 13,705 tons from the stock position at the end of August. Reserves at the end of September were equal to only half a month's requirements at the present rate of shipment, as compared with 1½ months' supply in September, 1939. Statistics of the past week's business indicate a continuation of this trend. Prime Western sales last week were 10,958 tons, as against 9031 tons two weeks ago. Although buyers' efforts to obtain bookings do not appear to have slackened to any noticeable degree, sellers generally report a slight let-up in buying pressure. Prices are firm at 7.64c. a lb., New York.

Tin

Slackened demand early in the past week resulted in some weakness being introduced into the market. Straits metal dropped from 51.375c. on Wednesday to 51.00c. per lb., delivered New York, Friday, at which level it entered the present week.

September Averages

Average prices of the major non-ferrous metals in September, based on quotations appearing in THE IRON AGE, were as follows:

	Per Lb.
Electrolytic copper, Conn. Valley	11.58c.*
Lake copper, Eastern delivery	11.58c.
Straits tin, spot, New York	50.30c.
Zinc, East St. Louis	6.94c.
Zinc, New York	7.33c.
Lead, St. Louis	4.78c.
Lead, New York	4.93c.

* Mine producers only.

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keeps the acid from eating good metal. Thus it stops waste of both acid and metal. It also prevents over-pickling, eliminates acid fumes, and reduces acid embrittlement.

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Scrap

... MARKET ACTIVITIES AND QUOTATION TRENDS

••• A note of watchful waiting dominates the scrap market this week, and price changes are limited primarily to minor movements more in the nature of adjustments than new trends, except at Pittsburgh where a general increase is reported. The increase at Pittsburgh is responsible for an advance of 8c. in this week's scrap composite to \$20.62. Philadelphia and Chicago quotations are unchanged.

While the restriction of Japanese exports and Tuesday's Washington conference on the domestic price situation will undoubtedly act as a damper on further upward movements, the demands of domestic mills, the foundation of the scrap industry, continue at such a record-breaking pace that the possibility of a general weakness developing appears as improbable as a general rise. In Canada, an impasse has been reached between scrap brokers and mill buyers over the question of prices, and the matter is being referred to the Canadian Government for settlement.

Outside of St. Louis, where shipments from Gulf ports are said to have been responsible for a decrease in prices on the latest sale of No. 2 heavy melting, the restrictions on Japanese shipments have not yet had an adverse effect upon quotations in any district market.

Chicago

On the basis of broker-mill transactions, No. 1 heavy melting is unchanged from last week at \$19.50 to \$20. Steel car axles are up \$1 to \$24 to \$24.50. A note of watchful waiting dominates the market. Recent embargo to Japan and events in Washington have stabilized the market for the present.

Philadelphia

The market was quieter during the past week than it has been in some time, sales being in small volume. In the absence of buying, prices are strongly supported by heavy mill operations and an attitude of watchful waiting prevails.

Youngstown

Underlying market sentiment continues strong here and dealers are still offering very high prices in an effort to lure scrap out of hiding. Some of the \$22.50 New York Central scrap may be applied on old orders in this area. This week's heavy melting quotations are raised 50c.

Cleveland

With strength shown all around the district, and scrap leaving for out-of-town points, the market had a bullish tinge at the start of this week, for one thing, the principal railroad list brought very high prices, with specialties going at around \$28, short rails around \$26, and malleable at \$25.25. Published prices are up 50c. to \$1 on heavy melting and other grades which have been in demand recently.

Buffalo

The market here continues very firm and so far unaffected by the embargo. Railroad specialties have advanced 50c. and stove plate is up \$1 on the basis of small sales. Scrap is coming out freely but no new mill sales have been made. Boat receipts from the upper Lake sections and from Eastern sources via the barge canal continue heavy.

Birmingham

The market here is steady with prices apparently leveling off. Stocks on dealers' yards are reported lowest of the year. Export dealers along the Gulf Coast are endeavoring to load cargoes before the embargo against scrap shipments to Japan goes into effect.

Cincinnati

The market here tends strong, although there is a watchful undercurrent. Mills are willing to take material, but show some resistance to higher prices. Dealers, however, are bidding stronger for material.

Detroit

Mixed sentiment continues to rule the scrap situation here, although a general tone of strength is apparent. Despite wide price spreads that are indicated on some items, narrowing is being effected as buying prices edge upward because of the underlying strength. A check on bullishness has resulted from news that some mills are slowing the flow of scrap, scheduling shipments and in some cases holding them up because storage space is filled.

St. Louis

An East Side mill has bought 6000 to 8000 tons of No. 2 heavy melting at 25c. below the preceding week. Offers are being received here of scrap from Texas and Oklahoma which ordinarily would go for export. One sale of a round tonnage is coming from New Orleans, the first shipment here from that market in the past seven or eight years. This is an early result of the embargo on shipments to Japan.

Pittsburgh

The market continues strong and No. 1 heavy melting is quotable this week at \$21 to \$22, a range which represents

broker and consumer buying. On the basis of sales into consumption, railroad heavy melting is quotable this week at \$22.50 to \$23, a majority of the heavy melting on the Pennsylvania list went for slightly more than \$22.50 and the Baltimore & Ohio list involving heavy melting went for slightly more than what the Pennsylvania brought. The present quotation of \$23 to \$23.50 on railroad scrap rails is a nominal one for open-hearth consumption, long rails having gone for more than \$25 to foundries in nearby areas. Secondary grades continue exceptionally strong, especially low phos. specialties.

New York

No real test of effect of restriction of shipments to Japan has been possible here as yet as buying for Japanese account is still being done. Shortage of steamers and other difficulties are hindering Japanese efforts to speed up shipments. While prices are unchanged here this week, both small dealers and larger brokers are operating on a hand-to-mouth basis and are following the major consumers markets closely for indications of effect of Japanese embargo. It is understood that Japanese interests have offered Mexico as high as \$18 a ton for about 150,000 tons of scrap held by the Mexican Oil Monopoly. This material had been previously offered to both the British and United States scrap brokers, but the cost of moving the material made it impossible to offer a price satisfactory to Mexico. This scrap is said to be of high quality, consisting mostly of scrapped railroad car parts and a small tonnage of oil country material.

Boston

Shipments to eastern Pennsylvania and exports continue, but at a somewhat reduced rate. Firmer prices in the Pittsburgh area have not been reflected here. Consumers apparently feel the embargo on Japanese shipments will ultimately lower prices. Sellers think differently. Not enough business is doing to move prices one way or the other.

Toronto

Considerable controversy regarding prices developed in the market here during the week and it is understood that reference may be made to the government to reach some agreement. In the meantime large mill consumers refuse to raise bids on new contracts. Dealers in turn are less anxious to close contracts and some have withdrawn from the market as far as forward delivery is concerned. Some of the larger holders of scrap have also withdrawn from the market and are refusing to sell until something more definite has been reached regarding prices. Imports from the United States continue heavy but dealers are paying from \$3 to \$4 more for scrap delivered from across the line than for domestic supplies.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.00 to \$22.00
Railroad heavy mltng.	22.50 to 23.00
No. 2 heavy melting	19.50 to 20.50
Railroad scrap rails	23.00 to 23.50
Rails 2 ft. and under	26.50 to 27.00
Comp. sheet steel	21.00 to 22.00
Hand bundled sheets	20.00 to 21.00
Heavy steel axle turn	20.75 to 21.25
Heavy steel forge turn	19.75 to 20.25
Machine shop turnings	15.50 to 16.00
Short shov. turnings	17.00 to 17.50
Mixed bor. & turn.	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Cast iron carwheels	22.00 to 22.50
Heavy breakable cast	17.00 to 17.50
No. 1 cupola cast	21.00 to 21.50
RR. knuckles & coup.	27.50 to 28.50
Rail coil springs	27.50 to 28.50
Rail leaf springs	27.50 to 28.50
Rolled steel wheels	27.50 to 28.50
Low phos. billet crops	27.50 to 28.00
Low phos. punchings	26.50 to 27.00
Low phos. heavy plate	25.50 to 26.50
Railroad malleable	24.50 to 25.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$20.50 to \$20.75
No. 2 hvy. mltng. steel	19.50 to 19.75
Hydraulic bund., new	20.50 to 20.75
Hydraulic bund., old	17.50 to 18.00
Steel rails for rolling	25.00 to 26.00
Cast iron carwheels	22.50 to 23.00
Hvy. breakable cast	21.00
No. 1 cupola cast	22.00 to 22.50
Mixed yard (f'd'y) cast	19.00 to 19.50
Stove plate (steel wks.)	17.50 to 18.00
Railroad malleable	22.50 to 23.00
Machine shop turn	14.50 to 15.00
No. 1 blast furnace	13.00 to 13.50
Cast borings	13.00 to 13.50
Heavy axle turnings	19.00 to 19.50
No. 1 low phos. hvy.	25.00 to 25.50
Couplers & knuckles	25.00 to 25.50
Rolled steel wheels	25.00 to 25.50
Steel axles	23.50 to 24.00
Shafting	25.00 to 25.50
Spec. iron & steel pipe	18.00 to 18.50
Cast borings (chem.)	14.00 to 14.50

CHICAGO

Delivered to Chicago district consumers:

Per Gross Ton	
Hvy mltng. steel	\$19.50 to \$20.00
Auto. hvy. mltng. steel alloy free	18.50 to 19.00
No. 2 auto steel	16.25 to 16.75
Shoveling steel	19.50 to 20.00
Factory bundles	19.00 to 19.50
Dealers' bundles	17.50 to 18.00
No. 1 busheling	18.50 to 19.00
No. 2 busheling, old	11.50 to 12.00
Rolled carwheels	23.25 to 23.75
Railroad tires, cut	23.00 to 23.50
Railroad leaf springs	23.00 to 23.50
Steel coup. & knuckles	23.00 to 23.50
Axle turnings	18.75 to 19.25
Coil springs	24.00 to 24.50
Axle turn. (elec.)	19.75 to 20.00
Low phos. punchings	22.50 to 23.00
Low phos. plates 12 in. and under	22.50 to 23.00
Cast iron borings	13.25 to 13.75
Short shov. turn.	14.00 to 14.50
Machine shop turn.	13.00 to 13.50
Rerolling rails	24.00 to 24.50
Steel rails under 3 ft.	23.00 to 23.50
Steel rails under 2 ft.	23.50 to 24.00
Angle bars steel	22.00 to 22.50
Cast iron carwheels	20.00 to 20.50
Railroad malleable	23.00 to 23.50
Agric. malleable	17.50 to 18.00

Per Net Ton

Iron car axles	24.50 to 25.00
Steel car axles	24.00 to 24.50
Locomotive tires	18.00 to 18.50
Pipes and flues	13.50 to 14.00
No. 1 machinery cast	17.50 to 18.00
Clean auto. blocks	18.00 to 18.50
No. 1 railroad cast	16.50 to 17.00
No. 1 agric. cast	16.00 to 16.50
Stove plate	12.50 to 13.00
Grate bars	14.00 to 14.50
Brake shoes	14.25 to 14.75

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.50 to \$22.00
No. 2 hvy. mltng. steel	20.50 to 21.00
Low phos. plate	24.00 to 24.50
No. 1 busheling	20.75 to 21.25
Hydraulic bundles	21.00 to 21.50
Machine shop turn	14.00 to 14.50

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$20.50 to \$21.00
No. 2 hvy. mltng. steel	19.50 to 20.00

Comp. sheet steel	\$20.00 to \$20.50
Light bund. stampings	16.50 to 17.00
Drop forge flashings	19.25 to 19.75
Machine shop turn	12.50 to 13.00
Short shov. turn	13.00 to 13.50
No. 1 busheling	19.75 to 20.25
Steel axle turnings	20.00 to 20.50
Low phos. billet and bloom crops	25.00 to 25.50
Cast iron borings	14.00 to 14.50
Mixed bor. & turn	14.00 to 14.50
No. 2 busheling	14.00 to 14.50
No. 1 cupola cast	22.00 to 22.50
Railroad grate bars	15.50 to 16.00
Stove plate	15.50 to 16.00
Rails under 3 ft.	25.50 to 26.00
Rails for rolling	25.00 to 25.50
Railroad malleable	24.50 to 25.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$20.00 to \$20.50
No. 2 hvy. mltng. steel	18.00 to 18.50
Scrap rails	21.50 to 22.00
New hvy. b'nded sheets	18.00 to 18.50
Old hydraulic bundles	16.50 to 17.00
Drop forge flashings	18.00 to 18.50
No. 1 busheling	18.00 to 18.50
Machine shop turn	13.00 to 13.50
Shov. turnings	14.50 to 15.00
Mixed bor. & turn	13.00 to 13.50
Cast iron borings	13.00 to 13.50
Knuckles & couplers	24.50 to 25.00
Coil & leaf springs	24.50 to 25.00
Rolled steel wheels	24.50 to 25.00
No. 1 machinery cast	20.50 to 21.00
No. 1 cupola cast	19.00 to 19.50
Stove plate	17.00 to 17.50
Steel rails under 3 ft.	25.00 to 25.50
Cast iron carwheels	18.50 to 19.50
Railroad malleable	22.50 to 23.50

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. melting	\$17.00 to \$17.50
No. 1 hvy. melting	16.75 to 17.25
No. 2 hvy. melting	16.00 to 16.50
No. 1 locomotive tires	18.50 to 19.00
Misc. stand. sec. rails	20.00 to 20.75
Railroad springs	21.00 to 22.00
Bundled sheets	13.00 to 13.50
Cast bor. & turn.	10.00 to 10.50
Machine shop turn	10.50 to 11.00
Heavy turnings	13.00 to 13.50
Rails for rerolling	23.00 to 24.00
Steel car axles	23.50 to 24.00
No. 1 RR. wrought	14.50 to 15.00
No. 2 RR. wrought	17.00 to 17.50
Steel rails under 3 ft.	22.75 to 23.75
Steel angle bars	19.50 to 20.00
Cast iron carwheels	20.00 to 20.50
No. 1 machinery cast	19.00 to 19.50
Railroad malleable	19.50 to 20.00
Breakable cast	16.75 to 17.25
Stove plate	13.50 to 14.00
Grate bars	13.50 to 14.00
Brake shoes	14.00 to 14.50

CINCINNATI

Dealers' buying prices per gross ton at yards:

No. 1 hvy. mltng. steel	\$16.25 to \$16.75
No. 2 hvy. mltng. steel	14.75 to 15.25
Scrap rails for mltng.	21.75 to 22.25
Loose sheet clippings	11.75 to 12.25
Hyd'lic bundled sheets	15.50 to 16.00
Cast iron borings	7.75 to 8.25
Machine shop turn	8.75 to 9.25
No. 1 busheling	12.25 to 12.75
No. 2 busheling	6.50 to 7.00
Rails for rolling	23.25 to 23.75
No. 1 locomotive tires	18.50 to 19.00
Short rails	23.75 to 24.25
Cast iron carwheels	17.75 to 18.25
No. 1 machinery cast	20.25 to 20.75
No. 1 railroad cast	18.75 to 19.25
Burnt cast	12.25 to 12.75
Stove plate	12.25 to 12.75
Agricul. malleable	16.75 to 17.25
Railroad malleable	19.75 to 20.25
Mixed hvy. cast	17.50 to 18.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting steel	\$18.00
No. 2 hvy. melting steel	17.00
No. 1 busheling	16.00
Scrap steel rails	17.00
Steel rails under 3 ft.	19.50
Rails for rolling	20.00
Long turnings	7.50
Cast iron borings	8.50
Stove plate	11.00
Steel axles	18.00
No. 1 RR wrought	16.00
No. 1 cast	17.00
No. 2 cast	13.00
Cast iron carwheels	17.00
Steel carwheels	18.00

DETROIT

Dealers' buying prices per gross ton, f.o.b. cars:

No. 1 heavy melting	\$16.00 to \$16.50
No. 2 heavy melting	15.00 to 15.50
Borings and turnings	11.50 to 13.25
Machine shop turnings	12.00 to 12.50
Long turnings	10.25 to 10.75
Short shov. turnings	12.00 to 13.75
No. 1 cast	18.50 to 19.00
Automotive cast	18.50 to 19.00
Hvy. breakable cast	15.00 to 15.50
Stove plate	12.25 to 12.75
Hydraul. Comp. sheets	18.50 to 19.50
New busheling	16.75 to 19.50
Sheet clips	14.00 to 16.00
Flashings	15.50 to 16.00
Low phos. plate	20.00 to \$21.00

NEW YORK

Dealers' buying prices per gross ton on cars:

No. 1 hvy. mltng. steel	\$16.00 to \$16.50
No. 2 hvy. mltng. steel	15.00 to 15.50
Hvy. breakable cast	17.00 to 17.50
No. 1 machinery cast	18.00 to 18.50
No. 2 cast	15.50 to 16.00
Stove plate	13.00 to 13.50
Steel car axles	20.00 to 21.00
Shafting	20.00 to 20.50
No. 1 RR. wrought	14.50 to 15.50
No. 1 wrought long	13.00 to 13.50
Spec. iron & steel pipe	12.00 to 12.50
Rails for rolling	19.00 to 19.50
Clean steel turnings*	10.00 to 10.50
Cast borings*	8.50 to 9.00
No. 1 blast furnace	8.50 to 9.00
Cast borings (chem.)	10.00 to 11.00
Unprepared yard scrap	8.50 to 9.00
Light iron	6.50 to 7.00

Per gross ton delivered local foundries:
No. 1 machin. cast..... \$19.00
No. 2 cast..... \$16.00 to 16.50

* \$1.50 less for truck loads.

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars:

Breakable cast	\$15.25 to \$15.50
Machine shop turn	9.00 to 9.25
Mixed bor. & turn	7.25 to 7.50
Bun. skeleton long	12.00 to 12.50
Shafting	19.25 to 19.50
Stove plate	12.25 to 12.50
Cast bor. chemical	9.50 to 9.75

Per gross ton delivered consumers' yards:
Textile cast..... \$17.00 to \$21.00
No. 1 machine cast..... 17.00 to 20.00

Per gross ton delivered dealers' yards:
No. 1 hvy. mltng. steel..... \$15.00 to \$15.50
No. 2 steel..... 14.00 to 14.25

PACIFIC COAST

Per net ton delivered to consumer:

	San Fran.	Los Ang.	Seattle
No. 1 hvy. mltng. steel	\$13.50		\$14.00
No. 2 hvy. mltng. steel		\$13.00	
Bundles		12.00	

CANADA

Dealers' buying prices at these yards, per gross ton:

Toronto Montreal	
Low phos. steel	\$12.00 \$11.50
No. 1 hvy. mltng. steel	11.25 10.75
No. 2 hvy. mltng. steel	9.75 9.25
Mixed dealers steel	8.75 8.25
Drop forge flashings	9.75 9.25
New loose clippings	8.75 8.25
Busheling	6.00 5.50
Scrap pipe	7.75 7.25
Steel turnings	7.25 6.75
Cast borings	6.75 6.25
Machinery cast	20.00 19.00
Dealers' cast	19.00 18.00
Stove plate	15.00 14.50

EXPORT

Dealers' buying prices per gross ton:

New York, truck lots, delivered, barges	
No. 1 hvy. mltng. steel	\$16.50 to \$17.00
No. 2 hvy. mltng. steel	15.50 to 16.00
No. 2 cast	15.00 to 15.50
Stove plate	12.50 to 13.00
Boston on cars at Army Base or Mystic Wharf	
No. 1 hvy. mltng. steel	\$16.50 to \$16.75
No. 2 hvy. mltng. steel	15.50
Rail (scrap)	16.75
Philadelphia, delivered alongside boats, Port Richmond	
No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	Nominal

Construction Steel

...STRUCTURAL STEEL, REINFORCING BARS, PLATES, PILING, ETC.

Fabricated Steel

Awards decline to 39,400 tons from 56,500 tons last week; new projects slightly lower at 24,800 tons; plate awards total 2210 tons.

AWARDS

NORTH ATLANTIC STATES

- 4325 Tons, Brooklyn, Atlantic Avenue improvement, section 5, to American Bridge Co., Pittsburgh.
- 1800 Tons, Niagara Falls, N. Y., Bell Aircraft plant, to Bethlehem Steel Co., Bethlehem, Pa., through Austin Co., Cleveland.
- 1570 Tons, Camden, N. J., Camden Forge Co. new machine shop building and extension to press shop, to Belmont Iron Works, Philadelphia.
- 660 Tons, Caldwell, N. J., Curtiss-Wright Corp. factory, 3-bay extension, to Harris Structural Steel Co., Plainfield, N. J.
- 655 Tons, Edgewood Arsenal, Md., nine magazines, to Belmont Iron Works, Philadelphia.
- 540 Tons, Erie, Pa., Erie Forge Co. plant addition, to Erie Steel Construction Co., Erie.
- 510 Tons, Bridgeton, N. J., Owens-Illinois Glass Co. warehouse, to Pittsburgh Bridge & Iron Co., Pittsburgh.
- 500 Tons, Rochester, N. Y., Consolidated Machine Tool Co. office building, to Leach Steel Corp., Rochester.
- 240 Tons, Brookville, Pa., State highway bridge, route 33013, to Fort Pitt Bridge Works Co., Pittsburgh.
- 230 Tons, O'Hara Township, Pa., maintenance building for Allegheny County, to Levinson Steel Co., Pittsburgh.
- 205 Tons, Pittsburgh, Catholic Institute of Pittsburgh, gym and auditorium for North Side Boys' High School, to Pittsburgh-De Moines Steel Co., Pittsburgh.
- 195 Tons, Bethlehem, Pa., St. Luke's Hospital, to Bethlehem Contracting Co., Bethlehem, Pa.
- 185 Tons, Luzerne County, Pa., highway bridge, to Pine Brook Iron Works, Scranton, Pa.
- 170 Tons, Rochester, N. Y., columns and girders, Bausch Memorial building, to F. L. Hughes & Co., Rochester.

THE SOUTH

- 3800 Tons, Front Royal, Va., State highway bridge FA-1015, to Bethlehem Steel Co., Bethlehem, Pa.
- 2055 Tons, Mobile, Ala., Air Corp operations hangars, to Nashville Bridge Co., Nashville, Tenn.
- 920 Tons, Kentucky Dam, Ky., gate towers for TVA, to Lakeside Bridge & Steel Co., Milwaukee.
- 850 Tons, Morgantown, W. Va., Mineral Industries building for State, to American Bridge Co., Pittsburgh.
- 810 Tons, Ottawa County, Okla., bridge, to J. B. Klein Iron & Foundry Co., Oklahoma City.
- 700 Tons, Watts Bar Dam, Tenn., TVA steam plant, to Fort Pitt Bridge Works Co., Pittsburgh.

- 660 Tons, Radford, Va., Hercules Powder Co. power house, to Ingalls Iron Works Co., Birmingham.

CENTRAL STATES

- 3000 Tons, South Chicago, manufacturing buildings for International Harvester Co., to Gage Structural Steel Co., Chicago.
- 1850 Tons, Detroit, assembly and office building for Packard Motor Co., to R. C. Mahon Co., Detroit.
- 1010 Tons, Saginaw, Mich., Saginaw Steering Wheel Division, General Motors Corp., to Whitehead & Kales Co., Detroit.
- 380 Tons, Chicago, Commonwealth Edison shop building, to Vierling Steel Works, Chicago.
- 370 Tons, St. Louis, Sears-Roebuck Co. warehouse, to Mississippi Valley Structural Steel Co., St. Louis.
- 335 Tons, Patterson Field, Dayton, Ohio, warehouse, to Guibert Steel Co., Pittsburgh.
- 250 Tons, Detroit, storage and office building for Steel Sales Corp., to Taylor & Gaslin Co., Detroit.
- 155 Tons, St. Paul, Minn., Great Northern Railway Co. bridge towers and girders, to Pacific Car & Foundry Co., Seattle, Wash.
- 150 Tons, Hill City, S. D., State overhead bridge, to Bethlehem Steel Co., Bethlehem, Pa.

WESTERN STATES

- 2700 Tons, Anchorage, Alaska, Air Corps base hangar and two flight hangars at Elmendorf Field (Invitation 36), to Bethlehem Steel Co., San Francisco.
- 2500 Tons, Mare Island, Cal., floating dry dock, to Bethlehem Steel Co., San Francisco, through Pacific Bridge Co., San Francisco, contractor.
- 1000 Tons, Hawthorne, Cal., plant extensions for Northrop Aviation, Inc., to Bethlehem Steel Co., Bethlehem, Pa.
- 450 Tons, Glacier Park, Mont., Two Medicine River bridge, to Missouri Valley Bridge & Iron Co., Leavenworth, Kan.
- 400 Tons, Mare Island, Cal., bridge crane for Navy, to Harnischfeger Corp., Milwaukee.
- 350 Tons, Burbank, Cal., building No. 7 for Lockheed Aircraft Corp., to Pennsylvania Iron & Steel Co., Los Angeles.
- 270 Tons, Stockton, Cal., hangar (Invitation 6616-41-16), to Judson-Pacific Co., San Francisco, through K. E. Parker Co., San Francisco, contractor.

PENDING STRUCTURAL PROJECTS

NORTH ATLANTIC STATES

- 6000 Tons, Cheektowaga, N. Y., airplane manufacturing plant for Curtiss Aeroplane Division, Curtiss-Wright Corp.
- 850 Tons, Newport, R. I., extension to building No. 94, Torpedo Station for U. S. Navy.
- 750 Tons, New York, hoppers, building and conveyor bridge for Consolidated Edison Co.
- 500 Tons, Boston, Evans Memorial Hospital unit; previously reported 300 tons.
- 330 Tons, Jeannette, Pa., mill building addition for Elliott Co.
- 310 Tons, McKean County, Pa., two State highway bridges.

- 300 Tons, Philadelphia, storehouse for Frankford Arsenal, Henry W. Horst Co., general contractor.
- 290 Tons, Tioga County, Pa., State highway bridge.
- 280 Tons, Philadelphia, crane tracks for Navy Department.
- 265 Tons, Washington, auditorium for George Washington University.
- 250 Tons, Orchard Park, N. Y., grade crossing elimination; Bero Engineering & Construction Co., North Tonawanda, N. Y., general contractor.
- 245 Tons, Lyscoming County, Pa., State highway bridge.
- 230 Tons, Woodford, Vt., State bridge.
- 230 Tons, Macedon, N. Y., grade crossing elimination; Mohawk Paving Co., Buffalo, general contractor.
- 215 Tons, Brooklyn, market building, Moore Street.
- 165 Tons, Silver Spring, Md., building for Chesapeake & Potomac Telephone Co.
- 160 Tons, New York, market building, Arthur Avenue.
- 155 Tons, Baltimore, motor oil storage building for Standard Oil Co. of New Jersey.
- 155 Tons, Burk County, State highway bridge.
- 150 Tons, Lawrenceville, N. J., field house for Lawrenceville Academy.
- 118 Tons, Clearfield County, State highway bridge.
- 110 Tons, Troy, N. Y., bottling plant for Coca-Cola Bottling Co.
- 105 Tons, Washington County, State highway bridge.

THE SOUTH

- 350 Tons, Watts Bar Dam, Tenn., intake gate-rail support towers for TVA.
- 300 Tons, Gilbertsville, Ky., operating spillway bridge for TVA.
- 140 Tons, Greendale, Ky., girls' dormitory for State.
- 130 Tons, Duncan, Ariz., State bridges FAP-138-A (1).
- 120 Tons, Watts Bar Dam, Tenn., Caney Creek bridge for State.

CENTRAL STATES

- 5500 Tons, State of Indiana, buildings for Aluminum Co. of America.
- 800 Tons, Kansas City, reconstruction 12th Street bridge.
- 592 Tons, Cleveland State grade crossing, project No. 301; bids Oct. 19.
- 387 Tons, Trumbull County, Ohio State project No. 304; bids Oct. 19.
- 370 Tons, Seville, Ill., Spoon River bridge for Toledo, Peoria & Western Railroad.
- 250 Tons, Detroit, building columns, Chevrolet Motor Car Co.
- 220 Tons, Chicago, crane runway for American Brake Shoe & Foundry Co.
- 200 Tons, Chicago, factory building, Charles Bruning Co.
- 180 Tons, Minneapolis, roof over grain storage for Osborne-McMillan Elevator Co.
- 135 Tons, Chicago, factory building for Charles Bruning Co.
- 100 Tons, Noble County, Ohio, State project No. 297; bids Oct. 18.
- 100 Tons, Beloit, Wis., foundry addition, Fairbanks, Morse & Co.

WESTERN STATES

- 1400 Tons, Alameda, Cal., Navy Air Base hangars.

Weekly Bookings of Construction Steel

Week Ended	Oct. 8,	Oct. 1,	Sept. 10,	Oct. 10,	Year to Date	
	1940	1940	1940	1939	1940	1939
Fabricated structural steel awards	39,400	56,500	35,500	12,600	841,765	734,475
Fabricated plate awards	2,210	1,215	1,065	2,020	120,675	123,145
Steel sheet piling awards	400	22,225	2,285	545	60,835	68,425
Reinforcing bar awards	12,600	5,250	16,850	9,050	364,395	368,770
Total Letting of Construction Steel	54,610	85,190	55,700	24,215	1,387,670	1,294,815

- 500 Tons, Tongue Point, Ore., seaplane hangar for Navy Department.
 300 Tons, Bonneville, Ore., transmission towers, Bonneville-The Dalles line (Invitation 1313).
 259 Tons, Arcadia, Cal., undercrossing; bids Oct. 31.
 238 Tons, Gilroy, Cal., Pajaro River bridge; bids Oct. 30.
 152 Tons, Sunol, Cal., Silver Springs crossing; bids Oct. 30.
 118 Tons, San Diego, Cal., storehouse, Naval Supply Depot; Minneapolis-Moline Power Implement Co., low bidder.

FABRICATED PLATES

AWARDS

- 1030 Tons, St. Joe, Fla., four 102-ft. diameter tanks, for Gulf Oil Corp., to Graver Tank & Mfg. Co., East Chicago, Ind.
 360 Tons, St. Louis, service barge, to Ingalls Iron Works Co., Birmingham.
 250 Tons, Jersey City, N. J., tanks for Delaware, Lackawanna & Western Railroad to Hammond Iron Works, Warren, Pa.
 230 Tons, Houston, Tex., six cylinders for Wyatt Metal & Boiler Works, to A. O. Smith Corp., Milwaukee.
 190 Tons, Gloucester, N. J., storage tanks for Sherwin-Williams Co., to Sharpville Boiler Works Co., Sharpville, Pa.
 150 Tons, Quonset Point, R. I., discharge pipe, to Lancaster Iron Works, Lancaster, Pa.

PENDING PROJECTS

- 150 Tons, Seattle, Cedar River pipe line 2; bids in.

SHEET PILING

AWARDS

- 400 Tons, Bonneville, Ore., foundation, units 7 to 10, Bonneville power house, to Bethlehem Steel Co., Seattle, through Puget Construction Co., Seattle, contractor.

PENDING PROJECTS

- 650 Tons, Barberton, Ohio, piling and 350 tons of bearing piles for Columbia Chemical Co. expansion.

Reinforcing Steel

Awards of 12,600 tons; 8,000 tons in new projects

AWARDS

ATLANTIC STATES

- 2500 Tons, Philadelphia Navy Yard, to Jones & Laughlin Steel Corp., Pittsburgh; Drydock Associates, contractor.
 2000 Tons, Middle River, Md., Glenn L. Martin airplane plant, to Truscon Steel Co., Youngstown, Ohio.
 380 Tons, Fairlawn, N. J., motor packing and shipping building and magnesium foundry, for Wright Aeronautical Corp., to Truscon Steel Co., Youngstown, through Mahony Troast Construction Co.
 350 Tons, Perry Point, Md., Veterans administration buildings, to Sweets Steel Co., through J. D. Hedin Construction Co., contractor.
 175 Tons, Philadelphia, warehouse for U. S. Army, Quartermaster Corps, to Truscon Steel Co., Youngstown, through Wark & Co.
 154 Tons, Armstrong Co., Pa., Route 2050 State highway project, to Bethlehem Steel Co., Bethlehem, Pa., through Porterfield Binger Construction Co., Youngstown.

SOUTH AND CENTRAL

- 3300 Tons, Detroit, St. James Herman Gardens housing project, to Calumet Steel Co.; A. Smith & Co. and Lippman Construction Co., contractors.
 1700 Tons, Norfolk, Va., Navy Yard, 1200 tons two-in squares to Jones & Laughlin Steel Corp., Pittsburgh, and 500 tons deformed bars to Virginia Steel Co.; Drydock Associates, contractor.
 360 Tons, Newport News, Va., Marshall Court housing project, to Bethlehem Steel Co., Bethlehem, Pa., through Virginia Steel Co.; Loftis Bros., contractor.
 340 Tons, Newport News, Va., Harbor Homes housing project, to Bethlehem Steel Co., Bethlehem, Pa., through Virginia Steel Co.; Woodcrest & Rosoff Co., contractor.
 285 Tons, Kansas City, Armour Co. expansion, to Truscon Steel Co., Youngstown, through Swenson Construction Co.

WESTERN STATES

- 7000 Tons, Bonneville, Ore., foundation units 7 to 10, Bonneville power house, to Bethlehem Steel Co., Seattle, through Puget Construction Co., Seattle, contractor.

PENDING REINFORCING BAR PROJECTS

ATLANTIC STATES

- 500 Tons, Brooklyn, Long Island Railroad, contract 5, section 6.
 300 Tons, New York, East River drive, contract 33.
 200 Tons, Newport, R. I., housing project.
 130 Tons, Orange, Conn., Wilbur Cross Parkway.

SOUTH AND CENTRAL

- 2000 Tons, Detroit, Ford aircraft engine plant.
 700 Tons, Cincinnati, English Woods housing project; bids taken.
 500 Tons, Marion, Ill., Veterans' hospital; bids taken.
 480 Tons, Flint, Mich., Chevrolet Motor Co.
 430 Tons, Port Washington, Wis., power house.

- 400 Tons, Norfolk, Va., Merrimack Park housing project.
 400 Tons, Dayton, Ohio, machine gun factory, Frigidaire Division, General Motors Corp.
 350 Tons, Cairo, Ill., post office; bids taken.
 300 Tons, Akron, Ohio, Edgewood housing project; bids Oct. 20.

WESTERN STATES

- 169 Tons, Gilroy, Cal., Pajaro River bridge; bids Oct. 30.
 145 Tons, Arcadia, Cal., undercrossing; bids Oct. 31.
 125 Tons, Hamilton Field, Marin County, Cal., magazines; bids in.
 123 Tons, Sunol, Cal., Silver Springs crossing; bids Oct. 30.
 120 Tons, Orella, Santa Barbara County, Cal., bridge; bids Oct. 23.
 115 Tons, Los Angeles, improve Los Angeles River, Section VIII (Specification 25); bids Oct. 30.

YOU CAN

CUT FINISHING COSTS

WITH THESE NEW

SPIRAL WOUND BRUSHES

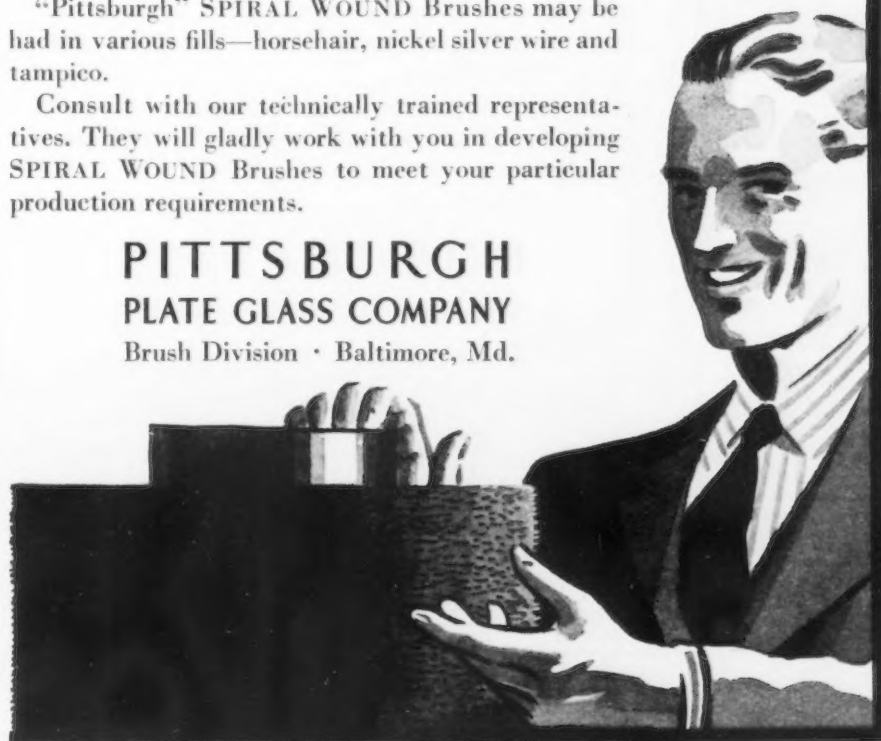
● Pittsburgh Plate Glass Company's SPIRAL WOUND Brushes will help you do a better finishing job and—they'll pay for themselves—many times over!—in the time they save.

"Pittsburgh" SPIRAL WOUND Brushes may be had in various fills—horsehair, nickel silver wire and tampico.

Consult with our technically trained representatives. They will gladly work with you in developing SPIRAL WOUND Brushes to meet your particular production requirements.

PITTSBURGH PLATE GLASS COMPANY

Brush Division • Baltimore, Md.



Prices of Finished Iron and Steel...

Steel prices on these pages are f.o.b. basing points (in cents per lb.) unless otherwise indicated. On some products either quantity deductions or quantity extras apply. In many cases gage, width, cutting, physical, chemical extras, etc., apply to the base price. Actual realized prices to the mill, therefore, are affected by extras, deductions, and in most cases freight absorbed to meet competition.

Basing Point ↓ Product													DELIVERED TO		
	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	Pacific Ports, Cars	Detroit	New York	Phila- delphia
SHEETS															
Hot rolled	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.20¢	2.10¢		2.65¢	2.20¢	2.34¢	2.27¢
Cold rolled ¹	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.15¢	3.39¢	3.37¢
Galvanized (24 ga.)	3.50¢	3.50¢	3.50¢		3.50¢	3.50¢	3.50¢	3.50¢	3.60¢	3.50¢		4.05¢		3.74¢	3.67¢
Enameling (20 ga.)	3.35¢	3.35¢	3.35¢	3.35¢			3.35¢		3.45¢	3.35¢		4.00¢	3.45¢	3.71¢	
Long ternes ²	3.80¢		3.80¢									4.55¢			
Wrought iron	4.75¢														
STRIP															
Hot rolled ³	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.20¢		
Cold rolled ⁴	2.80¢	2.90¢		2.80¢			2.80¢	(Worcester = 3.00¢)					2.90¢		
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢								
Commodity C-R	2.95¢			2.95¢			2.95¢	(Worcester = 3.35¢)					3.05¢		
TIN PLATE															
Standard cokes (Per 100-lb. base box)	\$5.00	\$5.00	\$5.00						\$5.10						
BLACK PLATE															
29 gage ⁵	3.05¢	3.05¢	3.05¢						3.15¢			4.05¢ (¹⁰)			
TERNES, M'FG.															
Special coated (Per base box)	\$4.30		\$4.30						\$4.40						
BARS															
Carbon steel	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢		(Duluth = 2.25¢)			2.50¢	2.80¢	2.25¢	2.40¢	2.47¢
Rail steel ⁶	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢					2.40¢	2.70¢			
Reinforcing (billet) ⁷	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢	2.25¢		
Reinforcing (rail) ⁷	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢				2.40¢	2.45¢	2.15¢		
Cold finished ⁸	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢							2.70¢		
PLATES															
Carbon steel	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	(Coatesville and Claymont = 2.10¢)		2.45¢	2.65¢		2.20¢	2.15¢
Wrought iron	3.80¢														
Floor plates	3.35¢	3.35¢									3.70¢	4.00¢		3.71¢	
Alloy	3.50¢	3.50¢				(Coatesville = 3.50¢)									
SHAPES															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢		(Bethlehem = 2.10¢)			2.45¢	2.75¢		2.27¢	2.215¢
SPRING STEEL C-R															
0.26 to 0.50 Carbon	2.80¢			2.80¢				(Worcester = 3.00¢)							
0.51 to 0.75 Carbon	4.30¢			4.30¢				(Worcester = 4.50¢)							
0.76 to 1.00 Carbon	6.15¢			6.15¢				(Worcester = 6.35¢)							
1.01 to 1.25 Carbon	8.35¢			8.35¢				(Worcester = 8.55¢)							
WIRE⁹															
Bright	2.60¢	2.60¢		2.60¢	2.60¢			(Worcester = 2.70¢)							
Galvanized	2.60¢	2.60¢		2.60¢	2.60¢			(Worcester = 2.70¢)							
Spring	3.20¢	3.20¢		3.20¢				(Worcester = 3.30¢)							
PILING															
Steel sheet	2.40¢	2.40¢				2.40¢					2.85¢	2.95¢			
IRON BARS															
Common		2.25¢			(Terre Haute, Ind. = 2.15¢)										
Refined	3.75¢														
Wrought	4.40¢														

¹ Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base. ² Unassorted 8-lb. coating. ³ Widths up to 12 in. ⁴ Carbon 0.25 per cent and less. ⁵ Applies to 29 gage within certain width and length limitations. ⁶ For merchant trade. ⁷ Straight lengths as quoted by distributors. ⁸ Also shafting. For quantities of 20,000 to 39,999 lb. ⁹ Carload lots to manufacturing trade. ¹⁰ Boxed.

PRICES

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Rerolling only). Prices delivered Detroit are \$2 higher f.o.b. Duluth, billets only, \$2 higher.

Per Gross Ton
Rerolling\$34.00
Forging quality 40.00

Shell Steel

Basic open hearth shell steel f.o.b. Pittsburgh and Chicago.

Per Gross Ton
3 in. to 12 in.\$52.00
12 in. to 18 in. 54.00
18 in. and over. 56.00

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting to length, or quantity. This type of steel is for hot rolled sections used for the forging of shells and includes rounds, round squares, and special sections.

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton
Open hearth or bessemer.\$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

Per Lb.
Grooved, universal and sheared. 1.90c.

Wire Rods

(No. 5 to 9/32 in.) *Per Lb.*
Pittsburgh, Chicago, Cleveland. 2.00c.
Worcester, Mass. 2.10c.
Birmingham 2.00c.
San Francisco 2.50c.
Galveston 2.25c.

9/32 in. to 4/64 in., \$3 a net ton higher. Quantity extras apply.

ROOFING TERNE PLATE

(F.o.b. Pittsburgh; Package, 112 Sheets)
20x14 in. 20x23 in.
8-lb. coating I.C.\$6.00 \$12.00
15-lb. coating I.C. 7.00 14.00
20-lb. coating I.C. 7.50 15.00
25-lb. coating I.C. 8.00 16.00
30-lb. coating I.C. 8.63 17.25
40-lb. coating I.C. 9.75 19.50

WIRE PRODUCTS

(To the Trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham)

Base per Keg
Standard wire nails\$2.55
Coated nails 2.55
Cut nails, carloads 3.85

Base per 100 Lb.
Annealed fence wire\$3.05

Base Column
Woven wire fence* 67
Fence posts (carloads) 69
Single loop bale ties 56
Galvanized barbed wire† 70
Twisted barbless wire 70

*15 1/2 gage and heavier. †On 80-rod spools in carload quantities.

Note: Birmingham base same on above items, except spring wire.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List
Machine and carriage bolts:
1/2 in. and smaller by 6 in. and shorter68
9/16 and 5/8 in. by 6 in. and shorter66
3/4 to 1 in. by 6 in. and shorter64
1 1/8 in. and larger, all lengths62
All diameters over 6 in. long62
Lag, all sizes65

Plow bolts68 1/2
Hot pressed nuts; c.p.c., t-nuts; square, hex., blank or tapped:
1/2 in. and smaller66
9/16 in. to 1 in. inclusive63
1 1/8 in. to 1 1/2 inclusive61
1 5/8 in. and larger60

On above items, excepting plow bolts, additional allowance of 10 per cent for full container quantities.

On all of the above items there is an additional 5 per cent allowance for carload shipments.

Semi-fin. hexagon nuts U.S.S. S.A.E.
1/2 in. and smaller 66 70
9/16 to 1 in. 63 65
1 1/8 in. through 1 1/2 in. 61 62
1 5/8 in. and larger 60 ..

In full container lots, 10 per cent additional discount.

Stove bolts, packages, nuts loose 72 1/2 and 10

Stove bolts in packages, with nuts attached72 1/2

Stove bolts in bulk82

On stove bolts freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago, New York, lots of 200 lb. or over.

Large Rivets

(1/2 in. and larger)

Base per 100 Lb.
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham\$3.40

Small Rivets

(7/16 in. and smaller)

Per Cent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham65 and 10

Cap and Set Screws

Per Cent Off List

Milled hexagon head, cap screws,

1 in. dia. and smaller50 and 10

Milled headless set screws, cut

thread 1/4 in. and larger 64

3/16 in. and smaller 73

Upset hex. head cap screws U.S.S.

or S.A.E. thread 1 in. and

smaller 70

Upset set screws, cup and oval

points 75

Milled studs 52

Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.

NON-FERROUS PRICES

Cents per lb. for early delivery

	Oct. 2	Oct. 3	Oct. 4	Oct. 5	Oct. 7	Oct. 8
Copper, Electrolytic ¹	12.00	12.00	12.00	12.00	12.00	12.00
Copper Lake 12.00	12.00	12.00	12.00	12.00	12.00	12.00
Tin, Straits, New York. 51.375	51.25	51.00	51.00	51.00	51.00	51.00
Zinc, East St. Louis ²	7.25	7.25	7.25	7.25	7.25	7.25
Lead, St. Louis ³ 4.85	4.85	4.85	4.85	4.85	4.85	4.85

¹ Mine producers' quotations only, delivered Conn. Valley. Deduct 1/4c. for approximate New York delivery price. ² Add 0.39c. for New York delivery. ³ Add 0.15c. for New York delivery.

Warehouse Products

Cents per lb., Delivered

	New York	Cleveland
Tin		
Straits pig 53.25	54.50	
Copper		
Electro 12.75	13.125	
Castings 12.50	12.875	
H. R. Sheets* 20.12	20.12	
Seamless tubes* 20.62	20.62	
Brass		
Yellow, sheets* 18.65	18.65	
Yellow, rods* 13.67	13.67	
Seamless tubes* 21.40	21.40	
Zinc		
Slabs 8.75	8.10	
Sheets, No. 9 casks.. 12.50	14.00	
Lead		
American pig 6.00	5.50	
Bar 7.95	8.25	
Cut sheets 8.15	8.25	

Antimony

Asiatic 16.00 17.00

Aluminum

Virgin, 99% 20.00 21.00
No. 1 remelt., 98-99% 18.00 18.50

Solder

1/2 and 1/2 31.50 32.25

Babbitt

Anti-friction grade .. 23.50 21.75

Old Metals

Cents per lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators. Selling prices are those charged to consumers after the metal has been prepared for their use.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper		
Hvy. crucible 9.625	10.25	
Hvy. and wire 8.625	9.025	
Light and bottoms. 7.625	8.125	
Brass		
Heavy 5.375	5.880	
Light 4.375	5.125	
No. 1 yel. turn. 5.00	6.00	
No. 1 red or compo. turnings 7.80	8.50	
Hvy. Mach. compo. 8.25	8.875	
Lead		
Heavy 4.125	4.50	
Aluminum		
Cast 8.50	9.50	
Sheet 13.00	14.00	
Zinc 4.375	5.125	

Miscellaneous Non-Ferrous Prices

ALUMINUM, delivered: virgin, 99 per cent plus, 18c.-19c. a lb.; No. 12 remelt No. 2 standard, 18c.-19c. a lb. NICKEL, electrolytic, 35c.-36c. a lb. base refinery, lots of 2 tons or more. ANTIMONY, prompt: Asiatic, 16.50c. a lb., New York; American, 13c. a lb., f.o.b. smelter. QUICKSILVER, \$173-\$177 per flask of 76 lb. BRASS INGOTS, commercial 85-5-5-5, 12.25c. a lb.

*These prices, which are also for delivery from Chicago warehouses, are quoted with the following percentages allowed off for extras: on copper sheets, 33 1/2%; on brass sheets and rods, 40%; on brass tubes, 33 1/2%, and copper tubes, 40.

PRICES

ALLOY STEEL

Alloy Steel Blooms, Billets and Slabs

Base per gross ton, f.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo or Bethlehem.....\$54.00

Alloy Steel Bars

Base per pound, f.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade 2.70c.
Delivered, Detroit 2.80c.

S.A.E. Series Numbers	Alloy Differential, per 100 Lb.
2000 (1.5 Ni)	\$0.35

2100 (1.5 Ni)	0.75
2300 (3.5 Ni)	1.70
2500 (5 Ni)	2.55
3100 Ni-Cr	0.70
3200 Ni-Cr	1.35
3300 Ni-Cr	3.80
3400 Ni-Cr	3.20
4100 Cr-Mo (0.15 to 0.25 Mo.)..	0.55
4190 Cr-Mo (0.25 to 0.40 Mo.)..	0.75
x4340 Cr-Ni-Mo	1.70
4340 Cr-Ni-Mo	1.85
4600 Ni-Mo (0.2-0.3 Mo, 1.5-2 Ni)	1.20
5100 (0.60-0.90 Cr)	0.35
5100 (0.80-1.10 Cr)	0.45
5100 Cr spring steel	0.15
52-100 Cr. (electric furnace)....	2.60
6100 Cr-V bar	1.20

6100 Cr-V spring steel	0.85
C-V	0.85

The above differentials are for hot rolled finished products. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2½ in. thick or over take the billet base.

Alloy Cold-Finished Bars

Base per pound, f.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.35c. Delivered Detroit, 3.45c., carlots.

Alloy Steel Plates

Base per lb., f.o.b. Pittsburgh, Chicago and Coatesville.
Open hearth grade.....3.50c.

STAINLESS AND HEAT-RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

Chromium-Nickel

No.	304	302
Forging billets	21.25c.	20.40c.
Bars	25.00c.	24.00c.
Plates	29.00c.	27.00c.
Structural shapes	25.00c.	24.00c.
Sheets	36.00c.	34.00c.
Hot rolled strip.....	23.50c.	21.50c.
Cold rolled strip.....	30.00c.	28.00c.
Drawn wire	25.00c.	24.00c.

Straight-Chromium

No.	410	430	442	446
Bars	18.50c.	19.00c.	22.50c.	27.50c.
Plates	21.50c.	22.00c.	25.50c.	30.50c.
Sheets	26.50c.	29.00c.	32.50c.	36.50c.
H't strip	17.00c.	17.50c.	24.00c.	35.00c.
C'd st.	22.00c.	22.50c.	32.00c.	52.00c.

TOOL STEEL

(F.o.b. Pittsburgh)

	Base per Lb.
High speed .....	.67c.
High-carbon-chromium .....	.43c.
Oil-hardening .....	.24c.
Special .....	.22c.
Extra .....	.18c.
Regular .....	.14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

ELECTRICAL SHEETS

(F.o.b. Pittsburgh)

	Base per Lb.
Field grade	3.20c.
Armature	3.55c.
Electrical	4.05c.
Motor	4.95c.
Dynamo	5.65c.
Transformer 72	6.15c.
Transformer 65	7.15c.
Transformer 58	7.65c.
Transformer 52	8.45c.

Silicon strip in coils—Sheet price plus silicon sheet extra width extra plus 25c. per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

CAST IRON WATER PIPE

Per Net Ton

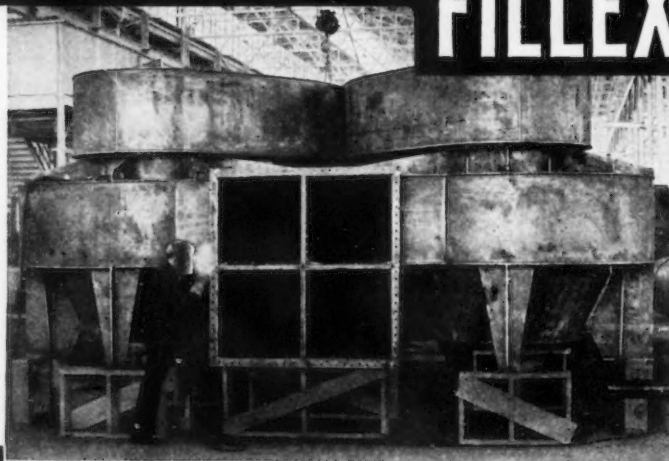
6-in. and larger, del'd Chicago..	\$54.80
6-in. and larger, del'd New York	52.20
6-in. and larger, Birmingham..	46.00
6-in. and larger f.o.b. dock, San Francisco or Los Angeles or Seattle	56.00

Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$45 at Birmingham and \$53.80 delivered Chicago.

YOUR HORIZONTAL FILLETS WILL COST LESS MADE WITH FILLEX

Dust collectors Murex-welded by American Blower Co., Detroit, involve many Fillex applications.

Fillex speeds fillet welding like that in this air test assembly, Murex-welded by The Graves-Marshall Co., Dayton, Ohio.



THE HEAVY COATED "HOT ROD" THAT PROVIDES CLEANER WELDS AT HIGHER CURRENTS

Specially designed for high speed horizontal fillet welding, Murex Fillex Electrodes help reduce welding costs.

Even at high amperages, Fillex Electrodes produce sound, evenly proportioned fillets without undercutting and with a minimum of spatter. Slag is easily removed, resulting in real savings in time on multi-pass work. Weld surfaces are smooth and welds require little or no cleaning.

Write and ask to have Fillex demonstrated on your horizontal fillet welding applications.

METAL & THERMIT CORPORATION 120 BROADWAY, NEW YORK, N. Y.

Albany • Chicago • Cincinnati • Detroit
Minneapolis • So. San Francisco • Toronto
"Murex Electrodes—Thermit Welding—Thermit Metals & Alloys."

Fillets in these Murex-welded petroleum condensers, built by Ross Heater Co., Buffalo, are typical of Fillex welds.



Investigate Thermit Welding, too—in use since 1902 for heavy repair work; crankshafts, housings, frames, etc.



PRICES

BOILER TUBES

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes, Minimum Wall.

(Net base prices per 100 ft., f.o.b. Pittsburgh, in carload lots)

	Seamless	Lap Weld
	Cold Rolled	Hot Rolled
1 in. o.d. 13 B.W.G.	\$9.01	\$7.82
1 1/4 in. o.d. 13 B.W.G.	10.67	9.26
1 1/2 in. o.d. 13 B.W.G.	11.70	10.23
1 3/4 in. o.d. 13 B.W.G.	13.42	11.64
2 in. o.d. 13 B.W.G.	15.03	13.04
2 1/4 in. o.d. 13 B.W.G.	16.76	14.54
2 1/2 in. o.d. 12 B.W.G.	18.45	16.01
2 3/4 in. o.d. 12 B.W.G.	20.21	17.54
3 in. o.d. 12 B.W.G.	21.42	18.59
3 1/2 in. o.d. 12 B.W.G.	22.48	19.50
3 3/4 in. o.d. 11 B.W.G.	28.37	24.62
4 in. o.d. 10 B.W.G.	35.20	30.54
4 1/2 in. o.d. 10 B.W.G.	43.04	37.35
5 in. o.d. 9 B.W.G.	54.01	46.87
6 in. o.d. 7 B.W.G.	82.93	71.96

Extras for less carload quantities:

40,000 lb. or ft. over	Base
30,000 lb. or ft. to 39,999 lb. or ft.	5%
20,000 lb. or ft. to 29,999 lb. or ft.	10%
10,000 lb. or ft. to 19,999 lb. or ft.	20%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

(F.o.b. Pittsburgh only on wrought iron pipe)

Base Price=\$200 Per Net Ton

Butt Weld

Steel	Black	Galv.
1/8 in.	56	36
1/4 to 3/8 in.	59	43 1/2
1/2 in.	63 1/2	54
3/4 in.	66 1/2	58
1 to 3 in.	68 1/2	60 1/2

Wrought Iron

	Black	Galv.
1/4 and 3/8 in.	+9	+10
1/2 in.	24	6 1/2
3/4 in.	30	13
1 and 1 1/4 in.	34	19
1 1/2 in.	38	21 1/2
2 in.	37 1/2	21

Lap Weld

Steel		
2 in.	61	52 1/2
2 1/2 and 3 in.	64	55 1/2
3 1/2 to 6 in.	66	57 1/4
7 and 8 in.	65	55 1/2
9 and 10 in.	64 1/2	55
11 and 12 in.	63 1/2	54

Wrought Iron

2 in.	30 1/2	15
2 1/2 to 3 1/2 in.	31 1/2	17 1/2
4 in.	33 1/2	21
4 1/2 to 8 in.	32 1/2	20
9 to 12 in.	28 1/2	15

Butt weld, extra strong, plain ends

Steel	Black	Galv.
1/8 in.	54 1/2	41 1/2
1/4 to 3/8 in.	56 1/2	45 1/2
1/2 in.	61 1/2	53 1/2
3/4 in.	65 1/2	57 1/2
1 to 3 in.	67	60

Wrought Iron

1/4 and 3/8 in.	+10	+43
1/2 in.	25	9
3/4 in.	31	15
1 to 2 in.	38	22 1/2

Lap weld, extra strong, plain ends

Steel		
2 in.	59	51 1/2
2 1/2 and 3 in.	63	55 1/2
3 1/2 to 6 in.	66 1/2	59

	Black	Galv.
7 and 8 in.	65 1/2	56
9 and 10 in.	64 1/2	55
11 and 12 in.	63 1/2	54

Wrought Iron

2 in.	33 1/2	18 1/2
2 1/2 to 4 in.	39	25 1/2
4 1/2 to 6 in.	37 1/2	24
7 and 8 in.	38 1/2	24 1/2
9 to 12 in.	32	20 1/2

On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher, on all butt weld 8 in. and smaller.



DoALL

**RELEASES
OTHER
MACHINE
TOOLS
ON
URGENT
DEFENSE
JOBS**

The DoALL offers important short cuts in stepping up production. A great time and energy saver in cutting out internal and external shapes from any metal up to 10" thick.

Eliminates long hours of tedious hand work in making special tools and dies and in turning out short runs of metal parts.

This rugged precision machine tool is creating a sensation in 30 countries — in metal working plants, machine shops, arsenals, airplane factories, ship yards, etc.

Let a factory trained man bring a DoAll to your plant and show you what it can save on your own work.

FREE—Handbook on Contour Machining, 158 pages of valuable metal working helps.

CONTINENTAL MACHINES, Inc.

1311 S. Washington Ave.,

Minneapolis, Minn.

Chrome Vanadium Steel Part for hydraulic press. Made by Burndy Engineering Co., New York.

Former milling time ... 13 hours

The DoALL removed sections shown in 37 minutes, reducing the finish milling to ... 2 hours

DoAll saving on milling ... 11 hours

☐ Send data on the DoAll
☐ Send Free Handbook

Name

Address

1A-10

PRICES

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton

Old range, bassemer, 51.50%..	\$4.75
Old range, non-bessemer, 51.50% ..	4.60
Mesaba, bessemer, 51.50%....	4.60
Mesaba, non-bessemer, 51.50%..	4.45
High phosphorus, 51.50%.....	4.35

Foreign Ores*

C.i.f. Philadelphia or Baltimore, Exclusive of Duty

Per Unit

Algerian, low P, Cu free, dry, 55 to 58% Fe	12c.
---	------

Caucasian, washed, 52% Mn....	60c.
African, Indian, 44 to 48% Mn..	51c.
African, Indian, 49 to 51% Mn..	56c.
Brazilian, 46 to 48% Mn.....	53c.
Cuban, del'd, duty free, 51% Mn.	72c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered.....	Nom.
Tungsten, domestic scheelite, delivered	Nom.
Chrome ore, lump c.i.f. Atlantic Seaboard, per gross ton: South African (low grade).....	Nom.
Rhodesian, 45%	\$23.50
Rhodesian, 48%	27.50

RAILS, TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., gross ton	\$40.00
Angle bars, 100 lb.	2.70

F.o.b. Basing Points

Light rails (from billets), gross ton	\$40.00
Light rails (from rail steel), gross ton	39.00

Base per Lb.

Cut spikes	3.00c.
Screw spikes	4.55c.
Tie plates, steel	2.15c.
Tie plates, Pacific Coast.....	2.30c.
Track bolts, steam railroads...	4.15c.
Track bolts, discount to jobbers all sizes (per 100 counts)...	65-5

Basing points, light rails—Pittsburgh, Chicago, Birmingham; spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapqua, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo; spikes alone—Youngstown, Lebanon, Pa., Richmond, Va.

FLUORSPAR Per Net Ton

Domestic washed gravel, 85-5 f.o.b. Kentucky and Illinois mines, all rail.....	\$19.00 to \$20.00
Domestic, f.o.b. Ohio River landing barges	19.00 to 20.00
No. 2 lump, 85-5 f.o.b. Kentucky and Illinois mines..	19.00 to 20.00
Foreign, 85% calcium fluoride, not over 5% Si., c.i.f. Atlantic ports, duty paid.....	Nominal
Domestic No. 1 ground bulk, 96 to 98%, calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines....	31.00
As above, in bags, f.o.b. same mines	32.60

REFRACTORIES

Fire Clay Brick Per 1000 f.o.b. Works

Super-duty brick, at St. Louis..	\$60.80
First quality Pennsylvania, Maryland, Kentucky, Missouri and Illinois	47.50
First quality, New Jersey.....	52.50
Second quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	42.75
Second quality, New Jersey...	49.00
No. 1 Ohio	39.90
Ground fire clay, per ton.....	7.10

Silica Brick

Pennsylvania	\$47.50
Chicago District	55.10
Birmingham	47.50
Silica cement, net ton (Eastern)	8.55

Chrome Brick

Net per Ton

Standard f.o.b. Baltimore, Plymouth Meeting and Chester...	\$50.00
Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	50.00

Magnesite Brick

Standard f.o.b. Baltimore and Chester	\$72.00
Chemically Bonded, f.o.b. Baltimore	61.00

Grain Magnesite

Imported, f.o.b. Baltimore and Chester, Pa. (in sacks).....	(—)*
Domestic, f.o.b. Baltimore and Chester in sacks	\$40.00
Domestic, f.o.b. Chewelah, Wash. (in bulk)	22.00

*None available.

**UNLOADS
4000
TONS OF
COAL IN
8 HOURS
by
DRAVO**



● Dravo built this straight line coal unloading plant for the Pittsburgh & Lake Erie Railroad Company. A 7-ton bucket with fast travel handles 4000 tons in 8 hours from barge to cars. It has a free digging capacity of 700 tons per hour. Two barges abreast can be unloaded at the same time, and, although the plant is stationary, the operator can move the barges along as unloading progresses. He does this by means of a shifting device controlled from his cab. And finally, it more than satisfies its owners.

● Whether the problem is one of modernizing old equipment, replacing obsolete handling machines or designing special facilities to meet new problems, consultation with Dravo Corporation may prove to be of great value to you. Added to its ability to fabricate and erect structures as shown above, Dravo Corporation has had years of experience building docks, retaining walls, plant foundations—everything that enters into the problem of terminal facilities. Bulletin 403 describes docks, mill foundations and terminal equipment. Bulletin 202 describes revolving cranes. Either will be sent upon request. Inquiries relative to specific problems may be addressed to

DRAVO CORPORATION

ENGINEERING WORKS DIVISION

SHIPYARDS: PITTSBURGH, PA.—WILMINGTON, DEL.

GENERAL OFFICES AND SHOPS: NEVILLE ISLAND—PITTSBURGH, PA.

PRICES

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.

Per Gross Ton
Domestic, 80% (carload).....\$120.00

Spiegeleisen

Per Gross Ton Furnace
Domestic, 19 to 21%.....\$36.00
Domestic, 26 to 28%.....49.50

Electric Ferrosilicon

Per Gross Ton, Delivered, Lump Size
50% (carload lots, bulk).....\$74.50*
50% (ton lots, packed).....87.00*
75% (carload lots, bulk).....135.00*
75% (ton lots, packed).....151.00*

Bessemer Ferrosilicon

Per Gross Ton, F.o.b. Jackson, Ohio
10.00 to 10.50%.....\$33.50

For each additional 0.50% silicon up to 12%, 50c. per ton is added. Above 12% add 75c. per ton.

For each unit of manganese over 2% \$1 per ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Silvery Iron

Per Gross Ton, F.o.b. Jackson, Ohio
5.00 to 5.50%.....\$27.50

For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton.

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Ferrochrome

Per Lb. Contained Cr., Delivered Carlots Lump Size, on Contract

4 to 6% carbon.....11.00c.
2% carbon.....17.50c.
1% carbon.....18.50c.
0.10% carbon.....20.50c.
0.06% carbon.....21.00c.

Spot prices are ¼c. per lb. of contained chromium higher.

Silico-Manganese

Per Gross Ton, Delivered, Lump Size, Bulk, on Contract

3% carbon.....\$113.00*
2.50% carbon.....118.00*
2% carbon.....123.00*
1% carbon.....133.00*

Other Ferroalloys

Ferrotungsten, per lb. contained W, del. carload.... \$2.00
Ferrotungsten, 100 lb. and less 2.25

Ferrovanadium, contract, per lb. contained V., del'd \$2.70 to \$2.90†

Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., ton lots.....\$2.25†

Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace, carload and contract, per net ton.....\$142.50

*Spot prices are \$5 per ton higher.
†Spot prices are 10c. per lb. of contained element higher.

Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton.....\$157.50

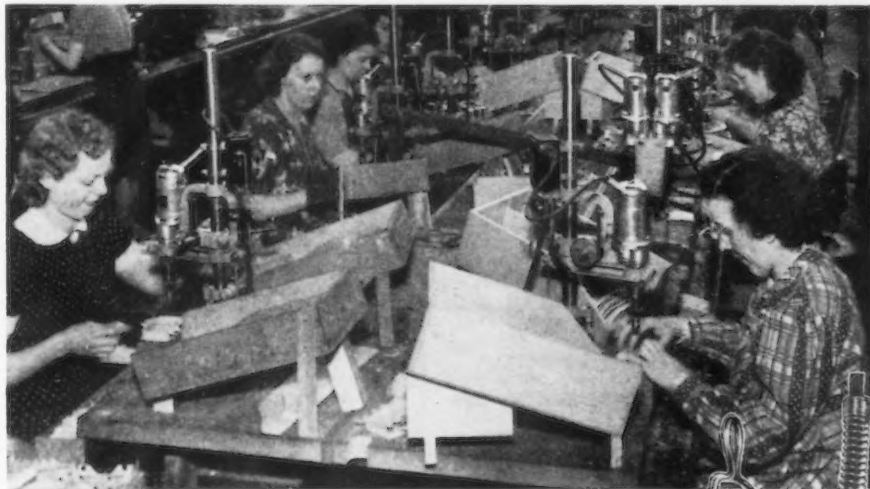
Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton.....58.50

Ferrophosphorus, electrolytic 23-26% in carlots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross tons, \$3 unitage, freight equalized with Nashville.....75.00

Ferromolybdenum, per lb. Mo, f.o.b. furnace.....95c.
Calcium molybdate, per lb. Mo, f.o.b. furnace.....80c.
Molybdenum oxide briquettes 48-52% Mo, per lb. contained Mo, f.o.b. Langeloth, Pa. 80c.

FUEL OIL

No. 3, f.o.b. Bayonne, N. J.....4.10c.
No. 6, f.o.b. Bayonne, N. J.....2.98c.
No. 5 Bur. Stds., del'd Chicago 3.25c.
No. 6 Bur. Stds., del'd Chicago 2.75c.
No. 3 distillate, del'd Cleveland 5.25c.
No. 4 industrial, del'd Cleveland 5.00c.
No. 5 industrial, del'd Cleveland 3.75c.
No. 6 industrial, del'd Cleveland 3.25c.



WORK becomes Play AND EVERYONE'S A WINNER!

These girls have a boss who knows his opportunities. First he installed a battery of Millers Falls electric screw drivers —always cost-cutters in any plant. Then—aware that these smooth, powerful units could take plenty of punishment without hurting themselves or tiring the operators — he arranged a continuous competition, one side of the table vs. the other, with one-hour innings and extra bonuses for the winners. Result? Work becomes play . . . fun without fatigue; the boss, too, wins profits without penalty. *The tools paid for themselves in two months . . . and they'd only just begun to earn!* Let us arrange a free trial on your work . . . there's no reason why you shouldn't profit the same way. Write us today.

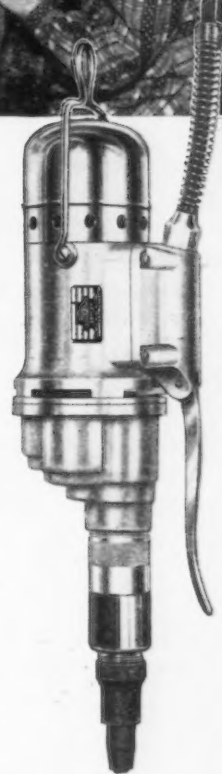
No. 50—SCREW DRIVER

Patented "Adjustomatic" Clutch makes No. 50 smooth, vibrationless, sensitive, permitting delicate assemblies, long life; weight 4¾ lbs.; \$50.

No. 51 has side handle and locking trigger switch; 5 lbs.; \$48.

No. 52 is streamlined for close quarters; easy toggle switching; 4½ lbs.; \$45.

All three available in choice of four speeds: 800, 1200, 2000 or 3000 R.P.M.



MILLERS FALLS COMPANY

Greenfield, Mass.



PRICES

COKE

Per Net Ton

Furnace, f.o.b. Connellsville, prompt	\$4.50 to \$4.75
Foundry, f.o.b. Connellsville, prompt	\$5.25 to 5.50
F'dry, by-product, Chicago	10.50
F'dry, by-product, New England	13.00
Foundry, by-product, Newark or Jersey City	\$11.30 to \$11.90
F'dry, by-product, Philadelphia	11.13
F'dry, by-product, Cleveland	11.55
F'dry, by-product, Cincinnati	11.00
Foundry, Birmingham	7.50
F'dry, by-product, St. Louis	\$10.75 to \$11.00
Foundry, from Birmingham, f.o.b. cars dock Pacific ports	\$14.75

BRITISH

British

Per Gross Ton, f.o.b. United Kingdom Ports

Ferromanganese, export	£17 18s.
Tin plate, per base box	32s. to 33s.
Steel bars, open hearth	£13 9s.
Beams, open hearth	£12 2s. 6d.
Channels, open hearth	£12 2s. 6d.
Angles, open hearth	£12 2s. 6d.
Black sheets, No. 24, gage	£18 17s. 6d. max.*; £18 17s. 6d. min.**
Galvanized sheets, No. 24	gage £19 10s. max.*; £19 10s. min.**

*Empire markets only.

**Other than Empire markets.

PIG IRON (Per Gross Ton)

Prices delivered various consuming points indicated by bold italics

	No. 2 Foundry	Basic	Bessemer	Malleable	Low Phos.
Boston	\$24.50	\$24.00	\$25.50	\$25.00	.....
Brooklyn	26.50	.....	.....	27.00	.....
Jersey City	25.53	25.03	26.53	26.03	.....
Philadelphia	24.84	24.34	25.84	25.34	.....
Bethlehem, Pa.	\$24.00	\$23.50	\$25.00	\$24.50	.....
Everett, Mass.	24.00	23.50	25.00	24.50	.....
Swedeland, Pa.	24.00	23.50	25.00	24.50	.....
Steelton, Pa.	.....	23.50	.....	.....	28.50
Birdsboro, Pa.	24.00	23.50	25.00	24.50	28.50
Sparrows Point, Md.	24.00	23.50	.....	.....	.....
Erie, Pa.	23.00	22.50	24.00	23.50	.....
Neville Island, Pa.	23.00	22.50	23.50	23.00	.....
Sharpsville, Pa.	23.00	22.50	23.50	23.00	.....
Buffalo	23.00	22.00	24.00	23.50	28.50
Cincinnati	23.44	23.61	.....	24.11	.....
Canton, Ohio	24.39	23.89	24.89	24.39	.....
Mansfield, Ohio	24.94	24.44	25.44	24.94	.....
St. Louis	23.50	23.02	.....	.....	.....
Chicago	23.00	22.50	23.50	23.00	.....
Granite City, Ill.	23.00	22.50	23.50	23.00	.....
Cleveland	23.00	22.50	23.50	23.00	.....
Hamilton, Ohio	23.00	22.50	.....	23.00	.....
Toledo	23.00	22.50	23.50	23.00	.....
Youngstown	23.00	22.50	23.50	23.00	.....
Detroit	23.00	22.50	23.50	23.00	.....
St. Paul	25.63	.....	26.13	25.63	.....
Duluth	23.50	.....	24.00	23.50	.....
Birmingham	19.38*	18.00	24.00	.....	.....
Los Angeles, San Francisco and Seattle	27.50	.....	.....	.....	.....
Provo, Utah	22.00	.....	.....	.....	.....
Montreal†	27.50	27.50	.....	28.00	.....
Toronto†	25.50	25.50	.....	26.00	.....

GRAY FORGE

Valley or Pittsburgh fce. \$22.50

CHARCOAL

Lake Superior fce. \$27.00
Delivered Chicago 30.34

Base prices are subject to an additional charge for delivery within the switching limits of the respective districts.

*Delivered prices on Southern iron for shipment to Northern points are 38c. a ton below delivered prices from nearest Northern basing point on iron with phosphorus content of 0.70 per cent and over. †On all grades 2.25 per cent silicon and under is base. For each 25 points of silicon over 2.25 per cent an extra of 25c. is charged.

WAREHOUSE PRICES

(Base Prices, Dollars per 100 lb., Delivered Metropolitan Areas)

	Pitts- burgh	Chicago	Cleve- land	Phila- delphia	New York	Detroit	Buffalo	Boston	Birm- ingham	St. Louis	St. Paul	Mil- waukee	Los Angeles
Sheets, hot rolled	\$3.15	\$3.05	\$3.15	\$3.35	\$3.38	\$3.23	\$3.05	\$3.51	\$3.45	\$3.18	\$3.30	\$3.48	\$4.30
Sheets, cold rolled	.....	4.10	4.05	4.05	4.40	4.30	4.30	4.58	.....	4.12	4.35	4.43	6.50
Sheets, galvanized	4.75	4.60	4.42	4.50	4.30	4.64	4.00	4.66	4.75	4.95	4.75	4.98	5.25
Strip, hot rolled	3.40	3.40	3.30	3.75	3.76	3.48*	3.62	3.86	3.70	3.52	3.65	3.73	.....
Strip, cold rolled	3.20	3.30	3.20	3.31	3.31	3.20	3.22	3.26	.....	3.41	3.83	3.54	.....
Plates	3.40	3.55	3.40	3.55	3.76	3.60	3.62	3.85	3.35	3.47	3.80	3.68	4.00
Structural shapes	3.40	3.55	3.58	3.55	3.75	3.65	3.40	3.85	3.55	3.47	3.80	3.68	4.00
Bars, hot rolled	3.35	3.50	3.25	3.85	3.84	3.43	3.35	3.98	3.50	3.62	3.75	3.63	4.15
Bars, cold finished	3.65	3.75	3.75	4.06	4.09	3.80	3.75	4.13	4.43	4.02	4.34	3.88	6.60
Bars, ht. rld. SAE 2300	7.20	7.10	7.55	7.31	7.35	7.42	7.35	7.50	.....	7.47	7.45	7.33	9.40
Bars, ht. rld. SAE 3100	5.75	5.65	5.85	5.86	5.90	5.97	5.65	6.05	.....	6.02	6.00	5.88	8.55
Bars, cd. drn. SAE 2300	8.15	8.15	8.15	8.56	8.59	8.45	8.40	8.63	.....	8.52	8.84	8.38	10.65
Bars, cd. drn. SAE 3100	6.75	6.75	6.75	7.16	7.19	7.05	6.75	7.23	.....	7.12	7.44	6.98	9.80

BASE QUANTITIES: Hot rolled sheets, cold rolled sheets, hot rolled strip, plates, shapes and hot rolled bars, 400 to 1999 lb.; galvanized sheets, 150 to 1499 lb.; cold rolled strip, extras apply on all quantities; cold finished bars, 1500 lb. and over; SAE bars, 1000 lb. and over. Exceptions: Chicago, galvanized sheets, 500 to 1499 lb.; Philadelphia, galvanized sheets, one to nine bundles, cold rolled sheets, 1000 to 1999 lb.; Detroit, galvanized sheets, 500 to 1499 lb.; Buffalo, cold rolled sheets, 500 to 1500 lb., galvanized sheets, 450 to 1499 lb.; Boston, cold rolled and galvanized sheets, 450 to 3749 lb.; Birmingham, hot rolled sheets, strip and bars, plates and shapes, 400 to 3999 lb., galvanized sheets, 500 to 1499 lb.; St. Louis, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 500 to 1499 lb.; Milwaukee, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 150 to 499 lb.; New York, hot rolled sheets, 0 to 1999 lb., cold rolled sheets, 400 to 1499 lb.; St. Paul, galvanized and cold rolled sheets, any quantity, hot rolled bars, plates, shapes, hot rolled sheets, 400 to 14,999 lb.; Los Angeles, hot rolled sheets, bars, plates, shapes, cold rolled sheets, 300 to 1999 lb., galvanized sheets, 150 to 1049 lb. Extras for size, quality, etc., apply on above quotations. *12 gage and heavier, \$3.23.

Sales Possibilities

... CONSTRUCTION, PLANT EXPANSION AND EQUIPMENT BUYING

North Atlantic

• **Signal Corps Procurement District**, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until Oct. 14 for diesel engine-driven power units (Circular 199) film storage cabinets (Circular 212).

• **Aviation & Transportation Corp.**, Vultee Aircraft, Inc., Division, 420 Lexington Avenue, New York, will take bids soon on general contract for one-story additions to plant at Berry Field, Couchville Pike, Nashville, Tenn., for expansion in parts production and assembling, totaling more than 500,000 sq. ft. of additional floor space. Cost close to \$4,000,000 with equipment. Marr & Holman, Stahlman Building, Nashville, are architects.

• **Sterling Products, Inc.**, 170 Varick Street, New York, drugs and chemicals, will begin superstructure soon for new four-story and basement plant, 80 x 460 ft., on West Lincoln Avenue, Rahway, N. J., for which general contract recently was let to Samworth-Hughes Co., Inc., 177 Van Houten Street, Paterson, N. J. Cost close to \$550,000 with equipment.

• **Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Oct. 15 for air ejectors and spare parts for dynamo condensers (Schedule 3389) for Brooklyn and Philadelphia Navy yards; four electric storage battery charging equipments (Schedule 3325) for New York, Jacksonville, Fla., and other yards.

• **Socony-Vacuum Oil Co.**, 26 Broadway, New York, has let general contract to Brown Brothers Construction Co., 303 North Richmond Avenue, Atlantic City, N. J., for two-story addition to branch plant at Paulsboro, N. J., 78 x 110 ft., for engineering and technical service. Cost over \$65,000 with equipment. Frederick G. Frost, 144 East Thirtieth Street, New York, is architect.

• **Commanding Officer**, Ordnance Department, Picatinny Arsenal, near Dover, N. J., asks bids until Oct. 14 for extruded brass shapes (Circular 829); until Oct. 15, metal parts for 3842 bomb fuze units (Circular 759); until Oct. 17, jacketed kettle (Circular 729).

• **Kellett Autogiro Corp.**, Island Road and Laycock Street, Philadelphia, aircraft and parts, plans one-story addition, about 60,000 sq. ft. of floor space. Cost over \$200,000 with equipment.

New England

• **Pratt & Whitney Division**, Niles-Bement-Pond Co., Inc., West Hartford, Conn., machine tools, small tools, etc., has asked bids on general contract for one-story addition, for expansion in production, storage and distribution departments. Cost about \$150,000 with equipment. Albert Kahn Associated Architects & Engineers, Inc., Detroit, is architect and engineer.

• **Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Oct. 15 for machine tables, boring heads, facing heads, cutters and measuring devices (Schedule 3391) for Portsmouth, N. H., Navy Yard; 15 motor-driven turret lathes (Schedule 3360) for Boston, Mare Island, and Puget Sound yards.

• **Bridgeport Brass Co.**, 774 East Main Street, Bridgeport, Conn., brass, bronze, copper and other metal goods, has engaged Fletcher-Thompson, Inc., 1336 Fairfield Avenue, architect and engineer, to prepare plans for one-story addition, 130 x 130 ft. Cost over \$100,000 with equipment.

Washington District

• **Public Works Officer**, Norfolk Navy Yard, Portsmouth, Va., asks bids (no closing date stated) for one 15,000-lb. steam boiler, with

bent water tubes, for power house at local naval hospital (Specifications 10100).

• **General Purchasing Officer**, Panama Canal, Washington, asks bids until Oct. 14 for drills, machine bits, bolt dies, split dies, post hole diggers, hacksaw blades, bolt clippers, breast drills, chopping axes, machinist's chisels and other equipment (Schedule 4389); until Oct. 15, bench grinders, punches, vises, pliers, respirators, snips and other equipment (Schedule 4391); until Oct. 16, sprocket hubs and cable cutters (Schedule 4401), shackles, ring bolts, gas regulators and other equipment (Schedule 4395).

• **Construction Quartermaster**, Borinquen Field, P. R., asks bids until Oct. 29 for mono-rail crane and equipment for six buildings (Circular 6900-62).

• **Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Oct. 15 for pipe-threading and cutting machine (Schedule 3416), boring, drilling and milling machine (Schedule 3391), engine lathes (Schedule 3342), forging machine (Schedule 3398), 30-in. double-disk sander (Schedule 3401), universal heavy-duty shapers (Schedule 3442), turret lathes (Schedule 3360), all motor-driven; electric storage batteries (Schedule 3370), pneumatic oil fire hose (Schedule 3326), billet rotating block (Schedule 3415), mooring buoys (Schedule 3422); until Oct. 18, motor-driven radial drills (Schedule 3445), for Eastern and Western yards.

South Central

• **Tube-Turns, Inc.**, 224 East Broadway, Louisville, seamless drawn fittings for welding, has let general contract to Austin Co., Cleveland, for one-story addition. Cost about \$50,000 with equipment.

• **Armstrong Tire & Rubber Co.**, Natchez, Miss., will take bids soon on general contract for five-story addition, 200 x 200 ft., for storage and distribution. Cost over \$200,000 with equipment. J. T. Canizaro, Lampton Building, Jackson, Miss., is architect.

• **Director of Purchases**, Tennessee Valley Authority, Knoxville, Tenn., asks bids until Oct. 14 for steel intake gate rail support towers for Watts Bar dam.

Southwest

• **Standard Steel Works**, Fourteenth and Howell Streets, North Kansas City, Mo., steel automobile bodies, tanks, etc., has let general contract to John H. Thompson, 114 West Tenth Street, Kansas City, Mo., for one-story addition, 108 x 113 ft. Cost over \$80,000 with equipment.

• **Scullin Steel Co.**, 6700 Manchester Avenue, St. Louis, has let general contract to Fruin-Colnon Contracting Co., Merchants-Laclede



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FLAT SPRINGS
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AMERICAN SPRING & MFG. CORP.
General Offices at HOLLY, MICHIGAN
Manufacturing Plants at Holly, Michigan and Belding, Michigan

Building, for one-story addition, 60 x 200 ft., for expansion in steel processing storage and distributing department. Cost over \$65,000 with equipment.

Southland Paper Mills, Inc., Lufkin, Tex., has let general contract to Merritt-Chapman & Scott Corp., 17 Battery Place, New York, for addition to newsprint mill, forming a new production unit. Cost close to \$1,750,000 with machinery. George F. Hardy, 305 Broadway, New York, is consulting engineer.

Western Pa. District

● **Mesta Machine Co.**, Eighth Avenue, West Homestead, Pa., rolling mill machinery, hydraulic power presses and other heavy machinery, has approved plans for three one-story additions, 60 x 300 ft., and two units each 60 x 90 ft., for expansion in forge shops and other departments. Cost over \$500,000 with equipment.

Ohio and Indiana

● **Lennox Furnace Co.**, Marshalltown, Iowa, furnaces, stoves, parts, etc., has leased two new buildings, each one-story, 90 x 300 ft., and 60 x 125 ft., respectively, to be erected by Armstrong Furnace Co., 1639 Olentangy River Road, Columbus, Ohio, near present works, for new Eastern branch plant. Cost over \$100,000 with equipment.

Aeronautical Corp. of America, Inc., Middletown, Ohio, has let general contract to F. H. McGraw & Co., American Building, for one-story addition, 120 x 120 ft. Cost over \$125,000 with equipment. Garriott & Becker, 800 Broadway, Cincinnati, are architects.

Hickok Electrical Instrument Co., 10514 Dupont Avenue, Cleveland, ammeters, indicating meters and other electrical apparatus, will take

bids soon on general contract for two-story addition, 80 x 100 ft., with one-story extension, 50 x 80 ft. Cost over \$75,000 with equipment. H. M. Morse Co., 1500 East Superior Avenue, is architect and engineer.

Harris-Thomas Drop Forge Co., Harshman Street, Dayton, Ohio, is erecting one-story addition, about 45 x 100 ft., for which general contract recently was let to Henry Stock & Son, 28 North Ludlow Street. Cost close to \$50,000 with equipment. Robert L. Killin, 504 Irving Avenue, is engineer.

Michigan District

● **Chevrolet Motor Division**, General Motors Corp., Detroit, has asked bids on general contract for two-story addition to branch plant at Flint, Mich., 132 x 330 ft., for expansion in service division. Cost over \$350,000 with equipment. Albert Kahn Associated Architects & Engineers, Inc., Detroit, is architect and engineer.

Packard Motor Car Co., 1580 East Grand Boulevard, Detroit, has plans for one-story addition to main production division, including motor testing building. Cost over \$100,000 with equipment. C. A. Handeyside Construction Co., General Motors Building, is engineer and contractor.

Marshall Electric Light and Water Commission, Marshall, Mich., plans expansion in municipal power plant, including new diesel engine-generating unit and auxiliary equipment. Cost about \$100,000 with equipment.

Middle West

● **Chicago, Rock Island & Pacific Railway Co.**, La Salle Street Station, Chicago, has let general contract to Priester Construction Co., Rock Island, Ill., for one-story addition to engine

house with shop facilities at yards, Silvis, Ill. Cost close to \$50,000 with equipment.

Cyclone Fence Co., Waukegan, Ill., chain link metal fencing, etc., plans one-story addition to branch plant at DeKalb, Ill., used for production of screen cloth. Cost over \$150,000 with equipment.

Northern Pump Co., 1620 Central Avenue, N.E., Minneapolis, rotary pumping machinery and parts, has let general contract to George F. Cook Construction Co., 2608 Nicollet Avenue, for new plant at Fridley, near Minneapolis, with main one-story unit for parts production and assembling, 150 x 1200 ft., and smaller structures, including boiler plant, 50 x 75 ft. Cost close to \$750,000 with equipment. Pesek & Shifflet, 914 Marquette Avenue, Minneapolis, are architects.

City Council, Bancroft, Iowa, asks bids until Oct. 24 for extensions and improvements in municipal power plant, including diesel engine-generator unit, switchboard and auxiliary equipment, and enlargement of cooling tower.

Manitowoc Shipbuilding Corp., Manitowoc, Wis., has approved plans for one-story shop, 80 x 300 ft., with crane runway 40 ft. long, for general construction. Cost over \$150,000 with equipment.

Pacific Coast

● **Aircraft Tools, Inc.**, 1609 East Slauson Avenue, Los Angeles, has let general contract to Lynch Construction Co., 730 East Gage Avenue, for one-story machine shop, 90 x 128 ft. Cost about \$50,000 with equipment. W. E. Wilson is company engineer.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Oct. 15 for two engine lathes (Schedule 3342) for Mare Island Navy Yard; 12 ram-type universal turret lathes (Schedule 3382) for Puget Sound yard.

Universal Aircraft Co., 1010 Second Avenue, Seattle, plans new one-story plant for parts production and assembling at Deer Park, Spokane, Wash. Cost close to \$100,000 with equipment.

Bureau of Yards and Docks, Navy Department, Washington, plans one-story addition to shipfitters' shop, including assembling bay, at Puget Sound Navy Yard, Wash., for which appropriation of \$450,000 has been authorized. Also extensions and improvements in power plant at yard. Cost about \$300,000 with equipment; completion of electric system on pier No. 4, \$90,000, and completion of electric system on pier No. 6, \$150,000.

North American Aviation, Inc., 5701 Imperial Highway, Inglewood, Cal., airplanes and parts, has let general contract to Austin Co., Los Angeles, for one-story addition, 325 x 330 ft., for expansion in parts and assembling divisions. Cost over \$350,000 with equipment.


Canada

● **Consolidated Mining & Smelting Co.**, Calgary, Alta., plans new works for production of ammonia and allied products, with power house, machine shop and other mechanical departments. Bids on general contract will be asked soon. Cost over \$5,000,000 with machinery.

Anaconda American Brass, Ltd., New Toronto, Ont., wire goods, electric wires and cables, etc., has let general contract to Carter-Halls-Aldinger Co., Ltd., 419 Cherry Street, Toronto, for one-story addition. Cost over \$400,000 with equipment. Ross & Macdonald, 1010 St. Catharine Street West, Montreal, are architects.


Electric Steels, Ltd., 507 Place D'Armes, Montreal, has awarded general contract to Anglin Norcross Corp., Ltd., 892 Sherbrooke Street West, Montreal, for foundry and machine shop to cost \$250,000.

Department of National Defense, Ottawa, has awarded general contract to Anglin Norcross Corp., Ltd., 892 Sherbrooke Street West, Montreal, for erection of a \$1,500,000 plant in Province of Quebec. Eastern Canada Steel & Iron Works, Ltd., Lesage Street, Quebec City, has been awarded structural steel contract.



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